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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :
H04N 7/173, 5/445

A1

(11) International Publication Number: WO 96/41478

(43) International Publication Date: 19 December 1996 (19.12.96)

(21) International Application Number: PCT/US96/09292

(22) International Filing Date: 6 June 1996 (06.06.96)

(30) Priority Data:
08/476,217 7 June 1995 (07.06.95) US

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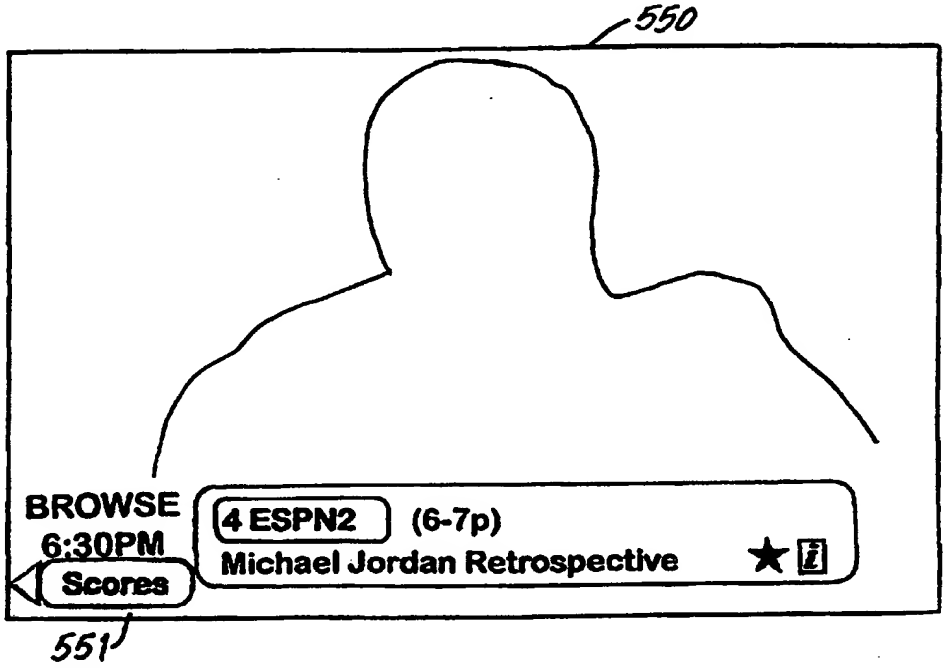
(81) Designated States: AU, BR, CA, CN, JP, KR, PL, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
*With international search report.*

(54) Title: ELECTRONIC TELEVISION PROGRAM GUIDE SCHEDULE SYSTEM AND METHOD WITH DATA FEED ACCESS

(57) Abstract

An electronic program schedule system with access to both stored television program schedule information and data feeds containing status information for live programs such as sporting events. The system includes a data processor for receiving program schedule information for a plurality of programs and data feeds containing status information for certain of the programs, and a video display generator for generating a display signal simultaneously comprising information from both the stored schedule information and the received data feed. The system is further provided with user control means such as a remote controller for generating user control commands and transmitting signals to the data processor in response thereto so as to control the content of the display signal. The display signal may be displayed on a display apparatus such as a television receiver. In addition, the program schedule system of the present invention utilizes category-specific user interfaces providing access to multiple services including television programs, received data feeds, home shopping services, and video games as well as the stored program schedule information.

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# ELECTRONIC TELEVISION PROGRAM GUIDE SCHEDULE SYSTEM AND METHOD WITH DATA FEED ACCESS

## Background of the Invention

This application is a continuation-in-part of application serial no. 428,809, which is a continuation-in-part of application serial no. 247,101, which is a continuation-in-part of application serial no. 119,367. This invention relates to an electronic program schedule system, which provides a user with schedule information for programs viewed by the user on a television receiver, whether broadcast, cablecast, delivered by satellite, optical fiber, or any other means of program distribution. More particularly, it relates to an electronic program guide that provides the user with the capability to access data feeds containing one or more types of information and to order products and services remotely at the user location simply by depressing a button on a remote control device or other user-controlled device.

Electronic program guides ("EPGs") for television systems are known in the art. For example, one prior system used an electronic character generator to display textual schedule information on the full screen of a television receiver. Other prior systems presented electronically stored program schedule information to a user for viewing while allowing the user to select display formats. Still other systems employed a data processor to input user-selection criteria, then stored only the program schedule information meeting these criteria, and subsequently used the stored information to automatically tune a programmable tuner or activate a recording device at the time of broadcast of the selected television programs. Such prior systems are generally discussed in "Stay Tuned for Smart TV," published in the November 1990 issue of *Popular Science*.

Collectively, the prior electronic program systems may be difficult to implement and cumbersome to use. They also fail to provide viewing capabilities that address in a more realistic manner the viewing habits of the users of these electronic program systems. Moreover, many of these systems are complex in their design and are expensive to implement. Ease of use and economy are primary concerns of television program distributors and viewers as they contemplate dramatic increases in the number and nature of program networks and other television-based services. And, as the number of television channels available to a user increases dramatically with the advent of new satellite and cable-based technologies, the utility of these prior systems substantially diminishes.

These prior-art systems also fail to provide the user with sufficient information, for example pricing and the like, about pay-per-view events, premium services or other packaged programming to which the user does not subscribe, nor do they provide the user with the capability to automatically purchase such programming on demand or impulse. Moreover, these prior-art systems are deficient in that they fail to provide an efficient and automatic method of updating or replacing the application software programs that implement the electronic guide at the user sites, relying instead on manual or other cumbersome forms of revision or replacement or hardware-based systems that can not be updated without physical replacement of integrated circuits and/or other parts.

Nor do these prior electronic guide systems have the capability of linking the user to other applications or information systems which are not part of the electronic program guide application or data.

Nor do these prior electronic guide systems provide video promotion of television programs and services that are functionally linked and visually displayed in an integrated fashion. Program promotion is an important element of the effective marketing of television programming. The promotion of pay-per-view pay (i.e., "a la carte") programs and other unregulated program services is particularly important to cable television operators in the wake of re-regulation by the federal government. The current method of promoting such programming using video is through dedicated "barker" channels that use full screen continuous trailers (i.e., previews) which may or may not be accompanied by prices and ordering information. Recently, such promotional videos have been shown in split screens where part of the screen shows general schedule information for a time period roughly corresponding to the time period during which the general program being promoted is shown. Accordingly, there exists a need for an electronic program guide which can provide improved display and linking of video promotions with program schedule information and order processing functions.

The prior electronic program guides also fail to provide the user with a simple and efficient method of controlling access to individual channels and individual programs. The amount of adult situations involving sex and violence has steadily increased during the last 40 years. The issue of how this affects children or other viewers has gained national attention. Providing a parent with the ability to lock-out a channel is a well known and widespread feature of certain television receivers and cable converter boxes. Despite this availability, the feature is seldom used by parents. The main impediments to its effective use are the cumbersome ways in which it is generally implemented, as well as the requirement that entire

channels be blocked in order to block access to any objectional programming. A channel-oriented parental lock is unfair to other programmers on the blocked channel -- who, for example, offer adult-oriented programming in the evening and youth-oriented programming the following morning-- and inconvenient for viewers who want access to such programs. Thus, there is a particular need for a system which provides password control to individual programs and channels using a flexible and uncomplicated on-screen user interface.

The prior electronic program guides are also deficient in that they do not provide the user with the ability to view on demand current billing status and, thus, a need exists for a system which can provide the user with current billing information on the user's demand.

An additional problem with prior program guides is that when displaying schedule information in grid format, i.e., columns representing time slots and rows representing channels, program titles generally are width-wise truncated to fit into the cells of the grid. The width of a grid cell varies with the duration of the program. Since a 30 minute program is allotted only a small amount of space for the program title and description, titles and/or descriptions for half and even full hour programs often must be truncated in order to fit into the allotted space. Some systems simply cut off the description of a program without abbreviating it in any way, such that the user is unable to determine the subject matter of the program. For example, a recent television program display included the following text in a grid cell: "Baseball: Yankees v." Although some systems partially alleviate this problem by providing two lines of text in each grid cell, this solution is not ideal because program descriptions may still be truncated.

A similar problem arises as the time slots change, either automatically or in response to a user control command. Typically, 90 minutes of schedule information is displayed at one time and the 90 minute window is shiftable in 30-minute increments. In the case where a 30 minute shift causes a 30 minute size grid cell to display, e.g., a two-hour movie, it is likely that the full title of the movie will not fit into the cell. Truncation of the title is thus required in this situation as well. In this case, while two lines of text may be desirable to fit the title in the 30 minute cell, the 60 and 90 minute cells may require only one line of text to display the title.

The prior electronic program guides also lack a method for creating a viewing itinerary electronically while still viewing a program currently appearing on the television receiver. Moreover, these prior program guides leave much guess work for the user as he navigates through a sequence of channels. When skimming through channels to ascertain the

program then being displayed on any channel, commonly known as "channel surfing," the user needs to guess which program is currently being aired from the video encountered as the user surfs through the channels. Since much -- in some cases, up to 30% -- of the programming appearing on any given channel at any given time is advertising or other commercial programming, the user is not provided with any clues as to what program is appearing on a selected channel at a given time and must therefore wait until the advertisement or commercial is over before ascertaining the program then appearing on the selected channel. Thus a need exists for a program guide which displays current program schedule information for each channel as the user surfs through the available channels.

Interactive home shopping services are also known in the art. Lacking in the art, however, is an interactive home shopping service deployed in conjunction with an EPG permitting users of the EPG to remotely order products and services associated with the EPG or the program listings included in the EPG.

In addition, with the availability of techniques for electronically blocking the home recording of copyrighted programs, it is now possible to prevent the loss of copyright royalties and other revenues that result when a home viewer makes an archival copy of a copyrighted program. Many viewers may be willing to pay for professional copies of these programs that they can no longer copy themselves by recording off-the-air. As a result, a new marketing opportunity is available if a convenient means for acquiring purchased archival copies of copyrighted programs can be provided. Users who would otherwise have produced an amateur recording of a program using consumer equipment may decide to purchase a professionally produced and packaged copy from a licensed distributor if they are unable to record the program on their own.

A further problem with existing EPGs is they have not adapted to the changing role of television in today's society. Increasingly, television is being used for more than just the delivery of broadcast program signals and is taking on a much broader role as an intelligent, interactive multimedia information terminal. The television is no longer a dumb device for simply receiving widely distributed broadcast signals. Return paths for providing information upstream from viewers to program distributors are currently in use. Intelligence is usually provided with a set-top box that provides memory and data processing capabilities. Typically, the EPG resides in the set-top box as well. The types and amount of information accessible through a television receiver have increased dramatically. In addition to the availability of nearly 100 and in some cases more than 100 channels of programming, the

television is now also being used for access to games, home shopping and banking services, and information provided in data feeds.

Because the quantity and types of information available have increased substantially, existing EPGs that provide information on broadcast programs only are inadequate. Although it is known in the art to search and display stored television program listings based on the category of the program, a more sophisticated information filtering system is needed that, in addition to disposing of information on television programs not of interest to the viewer, provides information on other services that are of interest and access to these services in a convenient manner. In addition, due to the large amounts of information available, a more sophisticated user interface is needed for navigating through the different services.

Accordingly, there is a need in the art for a simplified electronic program schedule system that may be more easily implemented, and which is appealing and efficient in operation. There is also a need to provide the user with an electronic program schedule system that displays both broadcast programs and electronic schedule information in a manner not previously available with other electronic program schedule systems, particularly those using a remote controller.

For example, there is a particular need for a flexible program schedule system that allows a user to view selected broadcast programs on a portion of the screen of the television receiver while simultaneously viewing program schedule information for other channels and/or services on another portion of the screen. There is also a need for such a program schedule system that permits the user to select from a plurality of selectable display formats for viewing the program schedule information. It is also preferred to have a system that indicates to the user those keys on the remote controller that are active in any particular mode of operation. There also exists a need for such a system that will give a user the capability to set a programmable reminder for viewing a program scheduled to air at a future time.

There is also a need for an electronic guide system providing the user with comprehensive information about pay-per-view events, premium services or other packaged programming to which the user does not ordinarily subscribe, and which provides the user with the capability to automatically purchase such programming on demand or impulse. There is also a need for an electronic guide system providing a reliable and efficient method of updating or replacing the application software that implements the electronic guide at the user sites.

There also exists a need for an electronic program guide that operates as a shell or window to provide the user with the capability to access other applications or information systems that are not part of the electronic program guide application or data.

There also exists a need for an interactive home shopping service deployed in conjunction with an EPG permitting users of the EPG to remotely order services and products associated with the EPG or the program listings included in the EPG.

There is also a need for a convenient means for purchasing archival copies of copyrighted programs that cannot be recorded by viewers.

There is also a need for providing EPG users with convenient access to information that may be of interest to users but is not available in the locally stored program schedule information or a received broadcast signal.

It is accordingly an object of the present invention to provide a system that will allow the user to view a broadcast program while, at the same time, interactively viewing program schedule information for other programs.

It is another object of the present invention to provide the user with the ability to select from among a plurality of display formats for the program schedule information.

It is yet another object of the present invention to indicate to the user of the program schedule system those keys on the remote controller active in the particular mode of operation of the system at the time of use.

It is a still further object of the present invention to provide the user of the electronic program schedule system with the capability of setting programmable reminder messages for any future program.

It is yet a further object of this invention to provide the system user with comprehensive information about pay-per-view events, premium services or other packaged programming to which the user does not subscribe and the capability to automatically purchase such programming on demand or impulse.

It is another object of the present invention to provide an electronic guide system that provides a reliable and efficient method of updating or replacing the application software programs that implement the electronic guide at the user sites.

It is still another object of the electronic program guide to operate as a shell or window to provide the user with the capability to access other applications or information systems which are not part of the electronic program guide application or data.

It is yet another object of the electronic program guide to provide a system whereby video promotion of television programs and services are functionally linked and

visually displayed in an integrated fashion to facilitate the marketing and sale of such programs and services.

It is still a further object of the present invention to provide password control for access to individual programs, as well as channels, using a protected interactive flexible and uncomplicated on-screen interface.

Another object of the present invention is to provide the user with current programming information for all programs as the user surfs through the available channels.

It is yet a further object of the present invention to provide a system in which the user can access his current billing information on demand.

It is another object of the present invention to provide a system which overlays television program listings against varying background views.

It is yet another object of the present invention to provide an improved display of text in the grid cells comprising a page of television program listings.

It is a further object of the invention to provide an electronic television program guide with an interactive home shopping service for ordering products and services associated with the EPG or a particular program.

It is a further object of the invention to provide an electronic television program guide with an interactive home shopping service for ordering products and services associated with the EPG or a particular program simply by depressing a button on a remote control device or other user-controlled selection means.

Another object of the present invention is to provide an electronic television program guide with convenient access to user-controlled additional information.

These and other objects of the invention are achieved by an electronic program schedule system which includes a receiver for receiving broadcast, satellite or cablecast television programs for a plurality of television channels and a tuner for tuning a television receiver to a selected one of the plurality of channels. A data processor receives and stores in a memory television program schedule information for a plurality of television programs to appear on the plurality of television channels. A user control apparatus, such as a remote controller, is utilized by a viewer to choose user control commands and transmit signals in response to the data processor which receives the signals in response to user control commands. A television receiver is used to display the television programs and television program schedule and other information. A video display generator receives video control commands from the data processor and program schedule information from the memory and displays a portion of the program schedule information in overlaying relationship with a

television program appearing on a television channel in at least one mode of operation of the television programming guide. The data processor controls the video display generator with video control commands, issued in response to the user control commands, to display program schedule information for any chosen one of the plurality of television programs in overlaying relationship with at least one television program then appearing on any chosen one of the plurality of channels on the television receiver.

The EPG system of the present invention is further provided with an interactive home shopping service permitting the user to order products or services associated with a program from an EPG display using a remote control device or other user-controlled selection means. The data processor is configured to generate user product and service requests and provide them to a central location for processing. Telephone lines, cable, optical fiber, or wireless transmissions may be used for providing the requests to the central location.

In addition, the EPG system of the present invention is provided with data feeds containing different types of information and selectable for display by the user on an on-demand basis. The data feeds may contain many different types of up-to-the-minute information, including sports scores, stock market quotations, general news, etc. Information from the stored program schedule information is combined with information obtained from received data feeds and displayed simultaneously. In an exemplary embodiment, the stored program schedule information comprises an identification of teams participating in a live sporting event and the channel on which the event is being broadcast and the information received from the data feed comprises information regarding the status of the game such as the current score and time remaining.

A related aspect of the present invention is the use of virtual channels for convenient access to different categories of information obtained from data feeds. The user may thus access data feeds in the same manner as television channels and customize a user interface by creating a favorite channel list comprised of both real and virtual channels.

## Brief Description of the Drawings

Fig. 1 is a block diagram showing various components of the preferred embodiment of the invention herein.

Fig. 2 is a block diagram showing the combination of program and schedule information by the video overlay device utilized in the preferred embodiment of the invention.

Fig. 3 depicts a remote controller that can be used in connection with the preferred embodiment of the electronic program guide system of the present application.

Fig. 4 depicts an alternative embodiment of the remote controller shown in Fig. 3.

Fig. 5 shows an overlay appearing on a television screen in one mode of operation of the preferred embodiment of the present invention.

Fig. 6 is a menu that appears on a television screen in a MENU mode of operation of the preferred embodiment of the present invention.

Fig. 6A is yet another menu that appears on a television screen in a MENU mode of operation of the preferred embodiment of the present invention.

Fig. 7 depicts a Viewer Preference Menu that appears on a television screen in one aspect of the preferred embodiment of the present invention.

Fig. 8 shows a Preferred Channel selection submenu.

Fig. 9 shows an impulse ordering menu that appears on a television screen in one aspect of the preferred embodiment of the present invention.

Fig. 10 shows a Premium Services submenu that appears in one mode of operation of the preferred embodiment of the present invention.

Fig. 11 shows a graphic overlay appearing on a television screen in a BROWSE mode of operation of the preferred embodiment of the present invention.

Fig. 12 shows a graphic overlay appearing on a television screen in a BROWSE mode of operation of the preferred embodiment of the present invention having different information from that shown in Fig. 11.

Fig. 12A shows a graphic overlay appearing on a television screen in a BROWSE mode of operation in the present invention displaying schedule information for a time and channel other than that shown in Fig. 11.

Fig. 13 shows a graphic overlay appearing in a REMINDER mode of operation of the preferred embodiment of the present invention.

Fig. 14 shows yet another graphic overlay appearing in a REMINDER mode of operation of the preferred embodiment of the present invention.

Fig. 15 is yet another menu that appears on a television screen in a MENU mode of operation of the preferred embodiment of the present invention.

Fig. 16 is yet another menu that appears on a television screen in a MENU mode of operation of the preferred embodiment of the present invention.

Fig. 17 is yet another menu that appears on a television screen in a MENU mode of operation of the preferred embodiment of the present invention.

Fig. 18 shows a grid listing of schedule information displayed in an All Listings mode of operation of the preferred embodiment of the present invention.

Fig. 19 shows schedule information displayed in a Listings By Category mode of operation of the preferred embodiment of the present invention.

Fig. 20 shows schedule information displayed in a Listings By Channel mode of operation of the preferred embodiment of the present invention.

Fig. 21 shows information displayed in response to a user's request for supplemental programming information.

Fig. 22 shows programming, ordering and video promotional information displayed in a Pay-Per-View mode of operation of the preferred embodiment of the present invention.

Fig. 23 shows an ordering submenu used in conjunction with the mode of operation shown in Fig. 22.

Fig. 24 shows yet another ordering submenu used in conjunction with the mode of operation shown in Fig. 22.

Fig. 24A shows yet another ordering submenu used in conjunction with the mode of operation shown in Fig. 22.

Fig. 25 shows another grid listing of schedule information displayed in an All Listings mode of operation of the present invention.

Fig. 26 shows a Premium Services submenu that appears in one mode of operation of the preferred embodiment of the present invention.

Fig. 27 shows a Messages menu that appears in one mode of operation of the preferred embodiment of the present invention.

Fig. 28 shows exemplary messages used in connection with the menu of Fig. 27.

Fig. 28A is an alternative message menu.

Fig. 29 shows billing information used in connection with the menu of Fig. 27.

Fig. 30 shows a Key Lock Access menu that appears during one mode of operation of the preferred embodiment of the present invention.

Fig. 31 shows a menu appearing in connection with an Interactive Television mode of operation of the preferred embodiment of the present invention.

Fig. 32 shows information that appears in a Quote Watch menu in connection with the Interactive Television mode of operation shown in Fig. 31.

Fig. 33 shows other information that appears in connection with the Interactive Television mode of operation shown in Fig. 31.

Fig. 34 is a menu showing information that appears in a news display in the Interactive Television mode of operation of the preferred embodiment of the present invention.

Fig. 35 is a menu showing information that appears in a sports display in the Interactive Television mode of operation of the preferred embodiment of the present invention.

Fig. 36a-d is a flow chart showing the operation logic required for implementation of a computer program for the electronic program guide.

Fig. 37 is a menu showing a Locator screen for locating channel numbers and defining favorite channel lists.

Fig. 38 is an alternative menu that can be used in a MENU mode of operation of the electronic program guide.

Fig. 38A and 38B show, respectively, an alternative main menu screen and a listing-by-time screen accessible from the alternative main menu.

Fig. 39 is a Lockout menu that alternatively can be used for permitting or prohibiting access to certain programs.

Fig. 40 is a Setup menu that can be used to set text location and a purchase code for premium and pay-per-view programming.

Fig. 40A shows an exemplary menu for inputting a lockout code.

Figs. 40B through 40E show, respectively, exemplary menus for entering, confirming, clearing or changing a purchase code.

Fig. 41 is a Lockout Verify menu that is used in connection with the Lockout menu of Fig. 39.

Fig. 42 is a flow chart showing the operation of the preferred embodiment of the textfit system of the invention herein.

Figs. 43A-E illustrate one embodiment of a series of screens that may be used for ordering a product associated with a program displayed in the EPG.

Fig. 44 illustrates one embodiment of a screen that may be presented to the user upon user activation of the ordering process while the cursor is highlighting a program listing for which a product or service is available.

Fig. 45 illustrates the product or service ordering feature in conjunction with the flip mode of the system of the present invention.

Fig. 46 illustrates the product or service ordering feature in conjunction with program information for a music program.

Fig. 47 is a block diagram of an alternate embodiment of the system of the present invention.

Fig. 48 illustrates one embodiment of a menu screen in the sports mode of the present invention.

Fig. 49 illustrates a second embodiment of a menu screen in the sports mode of the present invention.

Fig. 50 is an example of how information form a data feed may be combined with information from stored program schedule information.

Fig. 51 illustrates an exemplary screen of the sports mode of the present invention.

Fig. 52 illustrates a browse screen combining information from stored program schedule data with information obtained from a received data feed.

Fig. 53 illustrates one embodiment of a screen for accessing additional information from a received data feed.

Fig. 54 illustrates an embodiment of the browse mode of the present invention.

Fig. 55 illustrates a virtual channel screen for selecting favorite channels from both real and virtual channels.

Fig. 56 illustrates information contained in a virtual channel of one embodiment of the present invention.

Fig. 57 illustrates an embodiment combining the product ordering and virtual channel features of the present invention.

Fig. 58 is a schematic diagram of one embodiment of a system for receiving and distributing data feeds.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

### System Configuration

Fig. 1 is a block diagram showing various components of the electronic program schedule system generally designated as 10. Physically, these system components can be located in a user's set-top cable converter box or other signal reception or processing device, such as a satellite receiver. Alternatively, the components can be mounted in a separate housing, or included as part of a television receiver, VCR, personal computer, or multimedia player; or reside as a distributed application in a broadband network architecture.

An input signal 11 is connected to a receiver 12, which receives a transmitted data stream from a data provider. The data stream may contain, for example, information

about programs or services available in a particular market, geographical or otherwise. The input signal 11 can originate, for example, as part of a standard broadcast, cablecast or satellite transmission, or other form of data transmission, such as video dial tone. The data provider is a program information provider, the satellite uplink manager, a local cable operator, or a combination of these sources, and the data stream contains program schedule information for all television programs and other services available in the operator's geographical market.

The data stream may be modulated and then transmitted on the cable line in any number of ways, including as part of a dedicated channel transmission operating at a frequency of, for example, 75 MHz. Those of skill in the art will understand that numerous other transmission schemes can be used to transmit the data stream, such as embedding it in the vertical blanking interval of a program broadcast signal. As will be discussed in greater detail below, according to the present invention, the transmitted data stream may additionally contain application software for implementing or updating the electronic program guide at the user site.

The transmitted program schedule data or application software is received by the receiver 12 on signal input line 11. The received signal is passed from the receiver to a data demodulator 13, such as a QPSK demodulator or a GI Info-Cipher 1000R, which demodulates the transmission and passes it to a buffer 15.

A microcontroller 16, such as a M68000EC, receives data passed to the buffer 15. Bootstrap operating software, which may be used for capturing electronic program guide application software updates, is stored in a read only memory (ROM) 17. The microcontroller 16 uses the received program schedule information to build a database by storing the data in appropriately organized records in dynamic random access memory (DRAM) 18. The stored schedule information can be updated on a periodic basis, such as hourly, daily or weekly, or at any time when changes in scheduling or other factors warrant an update. The system also includes a system clock 19.

Alternatively, the program schedule information could be supplied in a ROM, disk or other non-volatile memory, or it could be downloaded to a storage disk or other data storage device. The invention herein is not directed to the particular method of transmission or reception of the schedule information.

If the microcontroller 16 recognizes the received data as application software which controls the program schedule system, as opposed to program schedule information, it stores it in non-volatile memory, such as an electrically erasable programmable ROM

(EEPROM) 20 or battery-backed static RAM (SRAM). This configuration allows revised or replacement versions of the application software to be downloaded directly from the software developer to the user site through the cable or other transmission system.

In the case where an EEPROM is utilized, revised or replacement versions of the application software downloaded from the developer are first stored in DRAM 18 by the microcontroller 16, under direction of the downloading operating software stored in the ROM 17. The stored application software can then be checked for accuracy by, for example, a checksum analysis or other verification routine.

After the accuracy of the application software has been verified, the microcontroller 16 initiates a routine to re-program the EEPROM 20, where the application software is permanently stored. The microcontroller 16 will issue proper control commands to a reprogram circuit 21, which is adapted to supply the proper program voltage and logic control signals 22 required to erase and write to the EEPROM. It supplies this program voltage, Vprog, as well as any other required control signals, such as read or write enable, to the EEPROM 20 upon command from the microcontroller 16. After the EEPROM 20 has been electrically erased, the microcontroller 16 initiates transfer of the new application software from the DRAM 18 to the EEPROM 20 for storing.

When a battery-backed SRAM is utilized as non-volatile memory, the microcontroller stores the revised or replacement version of the application software downloaded from the developer directly in the SRAM, again under direction of the downloading operating software stored in the ROM. The stored application software can then be checked for accuracy by, for example, a checksum analysis or other verification routine.

When power is first applied to the system 10, the bootstrap operating software verifies that the program guide application software is resident in memory. If it is not resident, the bootstrap operating software waits for a download of the software. Once the application software is resident, the microcontroller 16 executes the application program software from a dedicated portion of the DRAM 18. Alternatively, the application software can be executed directly from the non-volatile memory 20. Under control of the program guide application software, the microcontroller 16 first verifies that the program schedule information is resident in DRAM 18. If it is not resident, the microcontroller waits for a download of the program schedule information, as discussed above. Alternatively, if the application program is resident in memory, but the database records containing the program schedule information data are not yet available, the application software can be configured to carry out other tasks, such as allowing the user to carry out functions not requiring the

program schedule information data, as well as displaying an appropriate message indicating the database data is not yet available.

When the schedule system is operating, as discussed in greater detail hereinbelow, the microcontroller 16 takes the program schedule information stored in the DRAM 18 and, in conjunction with other downloaded data types such as stored bit maps for the screen configuration and the graphic symbol or logo displays stored in non-volatile memory 20 or, alternatively, in DRAM 18, supplies it to a video display generator (VDG) 23, which in the present embodiment may be a commercially available VGA-type graphics card, such as a Rocgen card manufactured by Roctec. The VDG includes a standard RGB video generator 24, which takes the digital program schedule information sent by the microcontroller 16 and converts it to an RGB format in accordance with the bit map for the particular screen display then being presented to the user on the television receiver 27. The configuration of each screen is shown and discussed in greater detail in the System Operation section below.

The VDG also includes a Video Overlay Device 25, which accepts the RGB video input, as well as an input from conventional television tuner 28, such as a conventional tuner manufactured by General Instrument or a Jerrold DPBB tuner, which supplies a program signal in standard NTSC video format. The overlay device 25 converts and combines the RGB signal with the signal from the tuner 28, and produces a composite NTSC output signal containing both the program signal and the program schedule information, as shown in Fig. 2. This composite video signal is supplied to a modulator 26, shown in Fig. 1, which can be a modulator such as available from Radio Shack, and then to the television receiver 27, which the user keeps tuned to the modulated channel, for example, channel 3 or 4. The composite video signal can also be supplied directly to the television receiver 27 or other receiving device from the VDG through a video port 25A on the VDG.

The system components identified in connection with Fig. 1 can all be implemented in a preferred platform by, for example, an IBM personal computer equipped with a transmission link and a video graphics card, such as those manufactured by Roctec. Other platforms, such as a cable converter box equipped with a microprocessor and memory, or a broadband network also could be used. Examples of the particular components are as follows: Microcontroller -- Motorola part no. MC68331-16; ROM -- Texas Instruments part no. TMS27PC512; DRAM -- Texas Instruments part no. TM4256; EEPROM -- Intel part no. 28F001BX-T. In any event, those of skill in the art will appreciate that the particular details of the hardware components and data storage are a function of the particular implementation of the system, and are not the subject of the present invention.

As discussed in detail below, the user may navigate through the program schedule system with a remote controller, such as that shown in Fig. 3, which operates on conventional principles of remote control transmitter-receiver logic, such as by infrared or other signalling, or other suitable user interface. The remote controller 31 communicates with the microcontroller 16 through the remote controller receiver 29, shown in Fig. 1, which can be a Silent Partner IR receiver and which receives signals transmitted by the remote controller 31 and supplies the microcontroller 16 with a corresponding digital signal indicating the key depressed by the user.

A remote controller suitable for the present invention, such as shown in Fig. 3, which can be a remote controller manufactured by Universal Electronics or Presentation Electronics' Silent Partner, may include a power switch 32, volume 33 and mute 34 controls, an ENTER key 35, 0-9 digit keys 36, four direction arrow keys 37A and 37B, a MODE key 38 and an information key 39 that is designated with a lower case "i." The power 32, volume 33 and mute 34 keys operate in the same manner as conventional remote controllers typically used with present-day television receivers. The numeric digit keys 36 also function in much the same manner as conventional remote controllers. A brief description of the remaining keys follows.

The MODE key 38 takes the user through various layers of the electronic program schedule system 10 and generally allows the user to return to a previous screen when he is in a submenu. The up/down direction arrow keys 37A allow a user to navigate through the different TV program channels when the program schedule system is in a FLIP or BROWSE mode, as will be fully described below, and also allow the user to navigate through highlighted bars displayed on the TV screen when in a MENU mode. The left/right direction arrow keys 37B allow the user to navigate through selected time periods when the program schedule system is in the BROWSE mode, as will also be described below. They further allow the user to navigate across subject-matter categories while in the "Categories" submenu of the MENU mode, as well as to navigate across time periods when the program schedule system is in a pay-per-view ordering mode and, in general, navigate in left or right directions to select various icons and other objects. The information, or "i," key 39 allows the user to view supplemental program and other information during the various modes of the program schedule system. The ENTER 35 key fulfills and inputs a command once the user has made a selection from the remote controller keys. The function and operation of these keys will be made more apparent in the detailed discussion of the FLIP, BROWSE and MENU modes below.

A second embodiment of the remote controller 40 is shown in Fig. 4. This embodiment of the remote controller also includes a power key 41, numeric digit keys 42, direction arrow keys 43A and 43B, information key 48, ENTER or SELECT or "OK" key 44, volume control 45, lockout key 45A, mute keys 46 and help key 48A. It also includes pound sign and star keys.

This embodiment of the remote controller further includes a number of icon keys 47A and 47B, which correspond to different submenus or modes of the program schedule system. The icons 47A and 47B may also be displayed on the TV screen when the program schedule system is operating. The icon keys essentially replace the MODE key 38 used in the embodiment of the remote controller shown in Fig. 3. Using these keys, the user can move from one mode to another simply by depressing the icon key corresponding to the desired mode of operation of the program schedule system. In the embodiment of Fig. 4, the icons 47A and 47B are shown as graphic symbols situated directly above a corresponding color-coded key. Alternatively, the color-coded keys could be eliminated and keys could be formed in the image of the icon itself.

The embodiment of the remote controller shown in Fig. 4 also includes three color-coded viewer preference or favorite channel keys, 48A, 48B and 48C that are situated directly above the icon keys. Each of these keys indicates to the program schedule system a distinct user-created "Channel Preference" or "Favorite Channel" list, which is a listing of a specific subset of channels for a particular user, arranged in the sequential order that the user wishes to view during operation of the program schedule system. The creation of the Channel Preference or Favorite Channel list is discussed in the following section. Thus, the system provides for at least three individual channel subsets for three individual users.

The remote controller of Fig. 4 also may be equipped with a "HELP" key 48A, which, when depressed, causes the microcontroller 16 to retrieve previously stored instruction messages from memory and cause them to be displayed on the television receiver 27. These messages offer help to the user in the form of instructions that guide the user through the operation of the various operating modes of the electronic television program guide. They may be text messages, or instructional video images, or audio programs, depending on the storage capacity of the system, or any combination of these. Moreover, these help messages may be created so that they are context-sensitive, i.e., the messages displayed depend entirely upon the precise point in the operation of the electronic program guide that the user depresses the help key 48A. For example, information could be supplied for operation of the remote controller, for operating the FLIP or BROWSE mode (discussed below), or any other mode of

operation of the guide, for impulse ordering, for setting a lockout, etc. In order to accomplish this, each point of operation of the guide could be coded so that the microprocessor could track the current operating point, for example, by temporarily storing the code reflecting the present operating point as the user operated the guide. When the user pressed the help key 48A, the microcontroller 16 would retrieve an appropriate set of messages based on the presently stored operating point code. Additionally, the i key 39 could be used to carry out the function of the help key.

Additionally, each of the functions of the remote controllers can also be integrated into a keypad on the user's cable box or other hardware.

## System Operation

In operation, the electronic program schedule system of the present invention functions as follows.

### FLIP Mode

When the user is viewing a particular program channel on the television receiver, the program schedule system defaults to a FLIP mode, shown in Fig. 5. In this mode, a graphic overlay 51 containing programming information for the channel currently tuned on the tuner is superimposed in overlaying relationship with a received program signal 55 on the screen of the television receiver 27 whenever the viewer changes the program channel, for example, by using the up/down direction arrows on the remote controller. The video overlay device 25, such as shown in Fig. 1, combines the computer-generated RGB video-graphic overlay information with the NTSC-format program signal from the tuner 28, and supplies an NTSC-format output signal, which includes the program signal from the tuner and the program schedule overlay information for viewing on the television receiver 27.

The programming information contained in the graphic overlay 51 is supplied to the RGB video generator by the microcontroller. In FLIP mode, the microcontroller first searches the program schedule database in, for example, the DRAM 18 to retrieve the programming information for the currently tuned channel 52 corresponding to the current time; i.e., the time at which the user just turned on the television receiver for viewing. The microcontroller 16 then supplies the current channel and program information to the RGB video generator 24 which converts the digital data information to RGB format and supplies it to the video overlay device 25.

In normal operation, the microcontroller 16 defaults to displaying all channels offered by the cable company prioritized by numeric order, which is determined by the

broadcast channel position in the radio spectrum or the marketing judgments of local cable operators. Using a "Channel Preference" submenu, or an alternative "Locator" screen, both of which are discussed below, the user can revise the content and/or sequential order of the channels presented to the television receiver 27.

In general, if the user does not issue a change-channel instruction, or other command, from the remote controller 40 within a predetermined time interval while in the FLIP mode, the microcontroller 16 instructs the VDG 23 to remove the graphic overlay 51 from the television receiver, thus presenting only a program signal 55 to the television receiver 27 for viewing. The duration of the predetermined time interval is such that it allows the user sufficient time to read the programming information contained in the overlay. The duration of the predetermined time interval during which the graphic 51 overlay appears is stored in a location in non-volatile memory 20 addressable by the microcontroller 16. The user can change the duration of the time interval, by first entering a Viewer Preference mode, and then selecting an "overlay interval" entry. The microcontroller 16 then causes a user prompt to be displayed on the screen which, for example, asks the user to select an appropriate time period for displaying in the graphic overlay on the screen. Using the numeric keys, the user can input an appropriate response, for example, a period between 5 and 60 seconds, and then depress ENTER. The new interval period is then read and stored by the microcontroller 16 in the overlay time interval location in memory.

If the user issues a change-channel command from the remote controller 40 before or after the predetermined overlay period has elapsed, either by using the up/down direction arrows 43A, or by entering a desired channel number using the numeric keys 42 and then depressing the ENTER key 44, the microcontroller 16 will cause the tuner 28 to tune to the desired channel -- either the channel immediately preceding or following the current channel when the up or down arrow 43A is used or the specific channel entered on the numeric key pad by the user -- and will also search for and immediately cause to be displayed the current program information for that channel. Thus, as the user flips through the channels, the program schedule information for any selected channel automatically appears in the graphic overlay 51 while the actual program 55 appearing on the selected channel at the particular time occupies the remainder of the screen.

The system can also be configured to issue an error message, such as an audible beep or displayed text indicating an invalid key stroke, if the user depresses either the left or right direction arrow keys while in the FLIP mode.

BROWSE Mode

To initiate the BROWSE mode, the user depresses the MODE switch once while in the FLIP mode when using the first embodiment of the remote controller 31 shown in Fig. 3. Utilizing the second embodiment of the remote controller 40 shown in Fig. 4, the user would depress the button below the BROWSE icon 47A.

In the BROWSE mode, the user is provided with the ability to scan through program schedule information for any channel, including, but not limited to, the channel being viewed, while at the same time continuing to view the TV program previously selected. As shown in Fig. 11, in this mode the graphic overlay information that appears in the FLIP mode is replaced with programming information for the channel being browsed, which may or may not be the channel currently being viewed by the user. After the user issues the command from the remote controller 40 to enter the BROWSE mode, a graphic overlay 111 is generated, as in the FLIP mode, with program schedule information for the currently tuned channel 112 and a textual BROWSE indicator 113 to remind the user of the currently active mode, as shown in Fig. 11.

If the user depresses either the up or down direction arrow on the remote controller 40 while in the BROWSE mode, program schedule information for either the prior or next channel is displayed in the graphic overlay portion 111 of the television receiver screen 27, while the tuner remains tuned to the channel program that appeared on the television receiver at the time the user entered the BROWSE mode, as shown in Fig. 12, and continues to so appear. Each successive depression of the up or down direction arrow key produces corresponding program schedule information for the selected channel. The graphic overlay may also include a small video window for showing the actual video signal of a currently aired program or a clip of a future program corresponding to the schedule information then appearing in the BROWSE overlay. In this way, the user can simultaneously scan program schedule information for all channels while continuously viewing at least one selected program on the television receiver. With the advent of sophisticated television receivers, it may also be possible to simultaneously display multiple broadcast programs on a single screen for viewing, or to split the screen to show, for example, broadcast programs in combination with advertisements. The BROWSE feature could be used in any of these situations.

If, at any time during scanning of the program schedule information in the BROWSE mode, the user desires to tune the television receiver 27 from the program channel currently being viewed to the program channel indicated in the schedule information in the graphic overlay, he simply depresses the ENTER button 44 and the tuner 28 will be tuned to

that channel. If the user does not want to view another channel and wishes to exit the BROWSE mode, thus removing the graphic overlay 111 with the program schedule information, he must depress the MODE key twice in the first embodiment of the remote controller 31. The first depression of the MODE key takes the user to the MENU mode, discussed below, and the second depression will take the user to the FLIP mode. Once in the FLIP mode, the graphic overlay will be removed after the duration of the time-out interval has passed. In the second embodiment of the remote controller shown in Fig. 4, the user toggles the BROWSE icon key to deactivate the BROWSE mode.

When the user first enters the BROWSE mode and begins scanning channels, the schedule information appearing in the overlay portion 111 describes the programs currently playing on any particular channel. In order to view programming information for later or earlier times, the user employs the left and right direction arrows 43B. As a consequence, the system will display future program schedule information for the particular channel previously selected by the up and down direction arrows, whether it is the channel currently being viewed or any other available channel. The schedule information presented includes the name of the program and program start/stop time. The instant embodiment of the system, in order to conserve memory, will not allow the user to view programming information for a time prior to the current time. The system could be easily modified to provide such information if adequate memory is made available. It may be desirable, for example, to allow a user to view schedule information for an earlier time to find a particular show and then allow the user to command the microcontroller to find and display future airing dates of the show, or the microcontroller could simply do this automatically.

When viewing program schedule information for a future time in the BROWSE mode, the displayed time of airing 121 of the particular show 122 is highlighted, as well as the channel number and service indicator 123, as shown in Fig. 12A. Such highlighted information reminds the user that he is viewing program schedule information for a future time. Also, when viewing program schedule information for a future time on any particular channel in the BROWSE mode, depression of the channel up direction arrow key on the remote controller 40 causes programming schedule information for the next channel to appear, which corresponds in time to the future time that was being viewed before the up key was depressed by the user. The channel down direction arrow key 43B functions identically in this mode.

If while viewing program schedule information for a future time in BROWSE mode the user depresses the ENTER key on the remote controller, the microcontroller 16 will

instruct the VDG 23 to display a REMINDER overlay message 130 which, as shown in Fig. 13, is displayed as a second overlay 131 appearing above the BROWSE overlay 132. The REMINDER message 130 queries the user as to whether the system should remind the user, at a predetermined time before the start of the selected program, that he or she would like to view the selected program, as shown in Fig. 13. If the user responds affirmatively, the microcontroller 16 stores reminder data consisting of at least the channel, time and day of the selected program in a reminder buffer, which contains similar schedule information for all programs for which the user has set a reminder. At a pre-determined time before the selected program start time, for example, five minutes, the microcontroller 16 will retrieve schedule information, including title and service, based on the reminder data, and will instruct the VDG 23 to display a REMINDER overlay message 140 on the television receiver 27, as shown in Fig. 14, to remind the user that he or she previously set a reminder to watch the selected program. The REMINDER message 140 contains the channel, service and start time. It also displays the number of minutes before the time of airing of the particular show and updates the display every minute until the time of airing. The REMINDER message 140 also displays a "TUNE" inquiry, which asks the user if she would like to tune to the selected program. When the user sets multiple reminders, the reminder overlays are stacked, for example, in ascending order according to the time each reminder is scheduled to be displayed, and the next reminder message will appear on the television receiver after the user takes appropriate action to remove the reminder message then being displayed. The REMINDER message (140 could also be adapted to allow the user to display or modify a list of all reminders previously set by the user. As with the overlay display time period in the FLIP mode, the user can modify the time period before a selected program that the REMINDER message appears by entering the Viewer Preference mode and revising the time entry.

MENU Mode

Using the remote controller 31 shown in Fig. 3, the user can enter the MENU mode from the BROWSE mode or from the FLIP mode by toggling the MODE button 38 once or twice, respectively. Using the remote controller 40 of Fig. 4, the user would simply depress the key 47B corresponding to the MENU icon.

Referring to Fig. 6, in the MENU mode, the system displays a plurality of menu items and icons, which correspond to and allow user selection of distinct program schedule information display formats, local cable system message boards and other on-line information services. The MENU screen shown in Fig. 6 is a full-screen display. In the

embodiment shown in Fig. 6, there are four vertically selectable horizontal bars 61-64, which are accessed using the up and down direction arrows 43A on the remote controller 31 or 40. At the extreme left of each bar, an identifying icon 61A-64A is displayed, which identifies the information contained in that bar. In the embodiment of Fig. 6, the "TV GUIDE" icon 61A in the first bar corresponds to program schedule information from TV Guide® magazine, the "NOW SHOWING" icon 62A in the second bar 62 corresponds to pay-per-view and premium service events, the "MSO Logo" icon 63A in the third bar 63 corresponds to Customer Service or local cable company information messages, and the circular icon 64A in the fourth bar 64 corresponds to other interactive services available to the user, or in the case of broadband networks, other venues, e.g., home shopping, banking or telephone use. As also shown in Figs. 6 and 6A, each bar also contains a textual description of its contents.

When the user first enters the MENU mode, the system defaults to selection of the program schedule bar. When a particular bar is selected, the textual description is removed and a plurality of icons or identifying windows are displayed adjacent the identifying icon. In Fig. 6, the program schedule bar 61 is selected. Using the up or down direction arrow key on the remote controller 40, the user selects a vertically adjacent bar. Figs. 15-17 show, respectively, selection of the Pay-Per-View bar 62, the Customer Service or Messages bar 63 and the Interactive TV services bar 64.

An alternative MAIN MENU screen 215 is shown in Fig. 38. Certain selection screens accessible from the menu shown in Fig. 38 are shown in Figs. 38A and 38B. It has three horizontally selectable bars: program schedule 205, Home Theater 206 and Customer Service 207. The MAIN MENU screen 215 also contains an additional "Locator" identifier, which is described below.

Once a particular bar in the MENU screen is selected, the user can select a particular icon from the plurality of horizontally selectable displayed icons 65A-65C by using the left or right direction arrow and the ENTER key on the remote controller 40. Each icon contains a graphical symbol appearing in a background window of a particular color. When a particular icon is selected, it is offset from its background window and the color of the window changes. In Fig. 6, the grid icon 65A immediately adjacent the "TV GUIDE" icon in the first bar 61 is selected.

The function corresponding to the selectable entries in the MAIN MENU screen will now be discussed with reference to Fig. 6. It will be appreciated by those of skill in the art that the same functionality applies in the categories shown in the MAIN MENU 215 shown in Fig. 38.

In the uppermost vertically selectable horizontal bar 61, the first grid icon 65A represents an "All Listings" mode in which the program schedule information is displayed in a grid listing, such as that shown in Fig. 18. Alternatively, a single column grid-like display could be used, as that shown in Fig. 25. In this format, the vertical y-axis identifies the channel number and service while the horizontal x-axis identifies the time. The screen display of Fig. 18 also contains in the upper left-hand corner a mode identifier 180, in this case the notation "All Listings," to remind the user of the current operating mode of the system. Directly underneath the mode display is a highlighted display 181 of the channel that the user was watching before entering the MENU mode. In the upper right-hand corner, a logo icon 182 appears in a window directly above a date/time identifier 183, which alternatively displays the current date and time.

In the center of the screen display shown in Fig. 18 is a graphical Active Key Display (AKD) 184 which indicates to the user those keys on the remote controller that are active for that particular mode of the program guide display system. For example, in the screen display of Fig. 18, the cursor can only move up, down or to the right. If the user were to depress the left direction arrow key on the remote controller at that point, the system would not carry out any function since the cursor can not move to the left. Thus, the left arrow key is not active so its image is not displayed on the AKD 184. Similarly, since the system will only respond to a depression of the up, down or right direction arrow keys and the ENTER key, they are the only key images displayed on the graphical AKD 184. The MODE key, though not displayed, is always active to change from one mode to another. When the user first enters the All Listings guide, the time listing begins by default at the half-hour immediately preceding the current time unless the current time is on the hour or half-hour, in which case the display begins with the particular hour or half-hour, and the channel listing begins at the last channel being viewed by the user before entering the MENU mode. For example, in Fig. 18, the current time is displayed as 7:13 p.m., the time listing begins at 7:00 p.m. and the channel listing begins with channel 4.

In the All Listings mode, a moveable highlighted cursor 185 is used to indicate the currently selected program to the user. The user manipulates cursor movement using the direction arrow keys on the remote controller 40. Furthermore, the entire information display pages upward if the cursor is placed at the bottom of the screen and the down direction arrow is depressed, and similarly pages to the left if the cursor is at the extreme right side of the display and the right direction arrow is depressed. In this way, the user can navigate through the entire program schedule.

The folder icon 65B immediately to the right of the All Listings icon in the top horizontal bar 61 of Fig. 6 identifies a "Category Listing" mode in which program schedule information is displayed and categorized by program content, as shown in Fig. 19. The particular listing shown in Fig. 19 includes the categories of Movies, Sports, News and Children 190A-190D. The database record stored for each listing contains a content-specific identifier so the microcontroller can search the database and categorize the information by content for purposes of displaying it in the Category Listing mode. As shown in Fig. 19, the user can manipulate the cursor left or right to highlight any one of the categories which appear at the head of the listing. In Fig. 19, the "Movies" category 190A is selected. As shown, the user is given a display of all movies, prioritized by time and then alphabetically by title of show, beginning with the half-hour immediately preceding the current time unless the current time is on the hour or half-hour, in which case the display begins with the particular hour or half-hour. The screen display shown in Fig. 19 also includes a textual description of the current operating mode of the program schedule system, as well as the graphic AKD 184, similar to that used in connection with the All Listings mode.

As with the All Listings mode, if the user highlights a show which is currently airing, he can immediately tune to that show by depressing the ENTER key on the remote controller 40. If the highlighted show is one that will appear at future time, the user is again given the option of setting a REMINDER message.

The triangular icon 65C at the far right of the TV GUIDE bar 61 in the display of Fig. 6 identifies a "Channel Listing" mode in which the program schedule information is categorized and displayed by channel, as shown in Fig. 20. The screen display shown in Fig. 20 again includes a textual mode identifier 201, the graphic AKD 184, and the window including the logo icon 182 and alternating time/date display 183. At the head of the program listing is a list of several consecutive channels 202A-202C beginning with the last channel viewed by the user before entering the Channel Listing mode. The channel in the middle window 202B is highlighted and is the channel for which schedule information is displayed. The display identifies those programs appearing on the highlighted channel beginning with the half-hour immediately preceding the current time unless the current time is on the hour or half-hour, in which case the display begins with the particular hour or half-hour. The user can display further future listings by manipulating the cursor to the bottom of the screen and paging the display, as previously described. The user can also change the selected channel by manipulating the left or right direction arrow keys on the remote controller 40. When the user issues a change-channel command in this manner, the next consecutive channel will be

displayed in the highlighted window 202B in the channel string at the head of the display, and schedule information for the newly selected channel will be displayed on the television receiver 27.

As with other modes, if a user wishes to tune to a highlighted program that is currently airing, he can do so by simply depressing the ENTER key on the remote controller 40, and if the user wishes to view a program that airs at a future time, the user is again given the option of setting a REMINDER message.

In each of the FLIP, BROWSE and MENU modes, a lower case "i" icon appears at a number of occasions in connection with certain program listings, such as movies, such as the "i" 203 shown in Fig. 20. Any time this icon appears, the user can view additional programming information, generally comprising a textual description of program content and/or other information related to the program, such as the names of cast members and the like, by depressing the "i" key 48 on the remote controller 40. An example of a display of such additional information is shown in Fig. 21. The second horizontal bar 62 appearing on the screen in the MAIN MENU mode shown in Fig. 6 is the "Home Theater" Listing. It corresponds to Pay-Per-View events or services, specialized programming, and Premium Service programs. When this category is chosen by the user, the television receiver displays information as shown in Fig. 15. The first theater-ticket icon 150 that appears in this Home Theater bar identifies a format in which the Pay-Per-View events and premium services are displayed, as shown in Fig. 22. As with other modes, the user can manipulate the cursor to highlight and select any particular show. Also, the user can obtain additional information about the Pay-Per-View event or service by depressing the "i" key 48 on the remote controller 40. The Pay-Per-View menu screen display shown in Fig. 22 also includes a video display section 220 in which short promotional clips of current and future events and services can be shown to the user while the user is viewing the Pay-Per-View scheduling information. The display of Fig. 22 is bit mapped such that the advertising clips may be shown in the lower left quadrant of the screen. The clips may be shown randomly in the video display section 120 or, alternatively, the clip shown could correspond to the particular selected entry on the list of events, and would change automatically as the user navigated through the list.

When a user highlights a Pay-Per-View event or service by manipulating the cursor to the desired event or service using the direction arrow keys on the remote controller 40, he can order the event or service by depressing the ENTER button on the remote controller, thus linking schedule, promotional and ordering functions. If the user selects a

particular Pay-Per-View event or service in this manner, the programming schedule system will next present to the user a Pay-Per-View ordering screen such as that shown in Fig. 23. The display includes a figure representing the cost of the event or service. The display also asks the user to choose from among a plurality of scheduled airing times 230A-230C, as well as whether the user would like to see a REMINDER message prior to the start of the Pay-Per-View event or service. The user responds to these inquiries by using the direction keys on the remote controller 40 to manipulate the cursor to the proper response and then depressing the ENTER key. After the user has ordered a Pay-Per-View event or service, the program schedule system will present the user with two ordering confirmation submenus, such as shown in Figs. 24 and 24A. In either of these submenus, the user can confirm or cancel the Pay-Per-View event or service.

If the user confirms the order, the microcontroller 16 stores the Pay-Per-View ordering information in a location in memory. The ordering information can then be transmitted to the cable operator by the microcontroller 16 either by phone line or on the cable line where the system has two-way communication or other such interactive capability. Alternatively, a computer at the cable operator location can interrogate the memory where the microcontroller stored the Pay-Per-View ordering information. At the appropriate time, the cable operator supplies the Pay-Per-View event or service and it is received by all users who have ordered the program.

The second icon 151 in the Pay-Per-View bar of Fig. 15 identifies a specialized broadcast, cable or satellite programming service to which the user has access via the electronic program guide. In this mode, the electronic program guide application software acts to connect the user, through an appropriate data transmission link, to the programming service, at which point the user interacts with the service. Alternatively, the electronic program guide provides the navigation software, including the menus and scheduling information, for the particular programming service. Such a service could be, for example, Your Choice TV ("YCTV"), a service offering reruns of highly rated broadcast and cable programs, in which case the icon may take a form suitable to identify YCTV. The programming available on YCTV is then supplied to the user via the programming guide system.

The last icon 152 appearing in the Pay-Per-View bar of Fig. 15 identifies a display format which lists all Premium Services offered by the cable operator, as shown in Fig. 26. In this mode, the user can select for impulse ordering any one of the premium services by manipulating the cursor using the direction arrow keys on the remote controller

and depressing the ENTER key. Similar to Pay-Per-View ordering, the system will present the user with a series of ordering displays and, if a service is ordered by the user, it will confirm the user's request using another other submenu. If confirmed, the microcontroller 16 will store the ordering information or transmit it directly to the cable operator. Once the order has been confirmed, the microcontroller can immediately allow the user access to the ordered premium service. In this manner, the user can order premium events or services on demand.

If, during FLIP or BROWSE modes, a user views a channel or schedule information for a service not subscribed to by the user, the microcontroller 16 causes an ordering submenu to appear instead of displaying a program signal along with the graphic overlay, as shown in Fig. 9. This submenu indicates to the user that she does not currently subscribe to the selected service, and then asks the user if she would like to order the service. If the user responds affirmatively, the program schedule system takes the user to the ordering submenu discussed above. In this manner, the user can order premium events or services on impulse. Many variations of this premium service ordering function are possible. For example, upon depressing the ENTER key while the screen shown in Fig. 9 is displayed, the user may be presented with the option to order the selected service or a package of programming services that includes the selected service. This feature may be implemented by receiving and storing information identifying packages of program services in the DRAM 18. When the user depresses the ENTER key while the screen in Fig. 19 is displayed, microcontroller 16 may then be programmed to check DRAM 18 to determine if the particular premium service is part of any package currently being offered and present the user with the option to purchase a programming package or the individual service.

The third horizontal bar 63 in the MENU mode shown in Fig. 6 is the "Messages" or "Customer Service" listing. As shown in Fig. 16, the first envelope icon 160 represents message information available from the cable operator. When the user selects the message icon, he is presented with a screen display of currently available messages, as shown in Fig. 27. The display shown in Fig. 27 includes cable system messages 270 and billing information 271. If the user selects the cable system messages option 270, she is presented with a message pertaining to the local cable operator, such as that shown in Fig. 28. If the user selects the billing status option 271 shown in Fig. 27, she is presented with a display of current billing information, such as that shown in Fig. 29. This information may include a history of purchases charged to the user, current balance information, pending orders, and, an indication of available credit, which can be an authorized debit limit previously arranged with the cable or other operator. Thus, a user could specify only a certain pre-set spending limit.

Once the amount of charges from pay-per-view events reaches the limit, the microcontroller would not permit further ordering of events. An alternative messages menu is shown in Fig. 28A.

The next icon 161 in the Customer Service information bar 63 of Fig. 16 identifies a "Viewer Preference" mode, which allows the user to create or revise a number of program schedule system operating parameters. Once selected, this display presents the user with several preference options concerning certain operating parameters of the program schedule system, as well as the viewing of certain channels and/or certain content-specific programming, for example, those shown in Fig. 7.

The first option shown in Fig. 7 is the "Parental" option 70, which can also be expressed as a "Key Lock Access" option. Once this option is initially selected by the user, the system displays a "Key Lock Access" submenu such as that shown in Fig. 30.

The Key Lock Access menu shown in Fig. 30 allows the user to control access to individual channels and programs or events by requiring the user to enter an access code "key," consisting of a user-specified four digit code in the specific embodiment discussed herein, before ordering or viewing these pre-selected channels, programs or events. The menu display shown in Fig. 30 shows a series of subject categories that are entries in the vertical y-axis selectable by the user. A particular subject category is chosen by using the up or down direction arrow keys on the remote controller 40 to highlight the desired entry. Once the user selects a particular subject category, the left and right arrow keys are used to navigate within the chosen category.

The first subject entry shown in Fig. 30 is the "Parental Guidance" category 301. Once the user selects this category by manipulating the cursor to highlight the entry, the cursor can be then moved horizontally to an active window 302 which displays and selects one the five letter rating items in the category. The letter items represent ratings of program content as follows: "V" for violence, "N" for nudity, "L" for language, "AS" for adult situations and "PD" for parental discretion. Once the user selects a particular item, such as "L", by moving to the active window 302 using the right direction arrow key, depressing the ENTER key will indicate to the microcontroller 16 that a key lock access has been selected for programs rated with a "L" rating for violent or explicit language. The system indicates activation of a key lock access by displaying a key icon directly below the "L" category display. Once a key lock access is set, it can be deactivated by selecting the category letter and then depressing the ENTER key. This action causes the key icon to disappear. The user can change the rating category in the active window 302 by using the left or right direction

arrow keys on the remote controller 40, images of which are displayed on the screen adjacent the active window as a reminder to the user. In this manner, the user can select other rating categories for setting a key lock access for any of the program content identifiers appearing in the Parental Guidance category.

The key lock access code itself consists of a four digit code, which the user can enter and modify at any time. To do so, the user highlights the fourth vertically selectable entry "Change Key Lock Access Code," 304 by manipulating the cursor to highlight it using the direction arrow keys on the remote controller. Once highlighted, the user enters a new four digit code or revises the then existing code and depresses the ENTER key. The microcontroller 16 then identifies the new four digit key lock access code and stores it in memory. The user can clear the key lock access code, as well as all other previously activated keys, by moving to the last entry in Fig. 30, "Clear Key Lock Access Code and All Keys," 305 which highlights the "OK" window, and then depressing the ENTER key. This action clears and deactivates all previously set keys, as well as the key lock access code.

The schedule information database record for each program contains a field that corresponds to the program content identifiers in the Parental Guidance category. During operation, the microcontroller checks this field in response to a user command to tune to or order a program, or to display its corresponding schedule information before carrying out the tuning, ordering or displaying function. If the parental guide identifier in the program schedule information database record matches any one of the activated parental guidance identifiers shown in Fig. 30, the user will be prompted to enter the four digit key lock access code before the system takes any further action. If the entered code matches the key lock access code previously entered and stored by the user as described above, the system will carry out the user request to tune to the program, to order it, or to display its corresponding schedule information. If the code is not recognized by the system, no further action will be taken and the user's request will be denied.

By manipulating the cursor using the direction arrow keys to highlight the second entry, "MPAA ratings," 308 the user can also set a key lock access for programs based on their MPAA rating code, as also shown in Fig. 30.

As with the Parental Guidance category, once the MPAA rating category has been selected, the user can move horizontally within the category to the active window 306 to select one the five rating codes, i.e., "G" for general audiences, "PG" for parental guidance, "PG-13" for suggested parental guidance, no one under 13 admitted without an adult, "R" for restricted and "X" for x-rated. As with the Parental Guidance category, by selecting a

particular rating --by using the left or right direction arrow keys until the particular rating code appears in the active window--and then depressing the ENTER key, the user sets a key lock access for the rating, in which case a key icon appears below the rating code. And, as with the Parental Guidance category, once a key lock access is set, the system will prompt the user to enter the four digit key lock access code anytime a request is made to tune to, order or display schedule information for a particular program having a rating code which matches a rating code for which key lock access has been activated.

The Key Lock Access mode also includes a subject category 303 for controlling access to channels, which may be entitled, for example, "Channel Block" or "Channel Lock." As with the Parental Guidance 301 and MPAA 308 categories, the user navigates to the Channel Block category 303 by manipulating the cursor using the direction arrow keys on the remote controller and depressing the ENTER key. Once the Channel Block category 303 has been entered, the user can move horizontally to an active window 307, which in Fig. 30 indicates channel 2. Once the user highlights this window by manipulating the cursor using the direction arrow keys on the remote controller 40, a key lock access can be set for the channel appearing in the active window. This is done, as with the other subject categories in the Key Lock Access mode, by depressing the ENTER key, which again causes a key icon to appear below the channel number in the active window. The user can move to the prior channel or to the next channel in sequence by depressing either the left or right direction arrow key on the remote controller 40. In this manner, the user can activate a key lock access for any available channel.

As with the Parental Guidance 301 and MPAA 308 categories, once a key lock access is set for a particular channel, the system will prompt the user to input the key lock access code prior to carrying out an instruction to tune to or order that channel. If the input key lock access code matches the previously stored access code, the user's instruction is carried out. Otherwise, the user's instruction is ignored. Thus, the user can control access to the audio and video program content of any available channel. In this instance, the microcontroller 16 will not allow audio or video program signals to pass to the VDG, but it will allow schedule information to appear for the channel.

An alternative method for effecting lockout of programs is accomplished using a "Lockout" screen, as shown in Fig. 39. In addition to limiting access to programs based on the Parental Guidance, MPAA and channel criteria, as discussed above, access may be limited on the basis of program title. Fig. 39 shows an alternative Lockout screen 250 that can be used to permit or limit access to programs based on program title, in addition to the

aforementioned criteria. Other parameters also may be included, such as time of day, day of week, credit limit, and content category (e.g., talk shows).

To enter the Lockout screen 250 shown in Fig. 39, the user must enter a multi-digit lockout code using the numeric digit keys 42 and the enter key 44 on the remote controller 40. The lockout code is set initially when the system is first used or installed. To set a lockout code in the first instance, the user accesses a Setup screen 260, such as that shown in Fig. 40. The Setup screen 260 will automatically appear the first time the electronic program guide is installed and initialized. For access during normal operation of the electronic program guide, a suitable access path to the Setup screen 260 may be provided, such as from an appropriate icon in the MAIN MENU 215.

In the Setup screen 260 of Fig. 40, the user can navigate to the Lockout Code category 265 and set a new lockout code using the appropriate navigation and selection keys on the remote controller 40. A suitable menu for inputting the lockout code is shown in Fig. 40A. Once enabled, the lockout code must be used to set or modify locks, to view a previously locked program, or to clear or change the lockout code. The memory location of the stored lockout code also should be remotely accessible, such as by the local cable company, in case the user forgets the lockout code and it must be erased.

Once the lockout code is entered and the Lockout screen 250 of Fig. 39 is displayed, navigation within the screen is controlled by the direction keys 43A and 43B on the remote controller 40. Using the up and down direction keys 43A to move the selection cursor, either the Movie Rating 251, Parental Guidance 252, Channel 253, Locked Program 254 or Lockout Code 255 category can be selected. The left and right direction keys 43B are then used to navigate inside the selected category.

Clearing a previously set lockout code is accomplished by moving the selection cursor to the "Clear" entry 256 in the Lockout Code category 255 and depressing the enter key 44 on the remote controller 40. This causes the microcontroller to clear the lockout code stored in memory, as well as all locks previously set by the user. To change the current lockout code, the user navigates to the "Change" entry 257 in the Lockout Code category 255 and depresses the enter key 44 on the remote controller 40. The user is then prompted to enter a new lockout code, which is subsequently stored in memory by the microcontroller.

To set a lock in either the Movie Rating 251 or Parental Guidance 252 category, the user navigates to the selected entry in Fig. 39 by manipulating the selection cursor using the direction keys 43A and 43B on the remote controller 40, and then depresses a lockout key on the remote controller, such as the padlock key 45A shown in Fig. 4. The microcontroller

will appropriately modify the display to indicate that a lock has been set, for example, by changing the color of the text or the background in the selected entry window, or by displaying an appropriate icon next to the text in the selected entry window. In Fig. 39, a padlock icon 258 appears in the window of the "PG" entry in the Movie Rating category 251. Toggling the lockout key while the selection cursor is positioned on a selected entry will alternately enable and disable the lockout function for that entry.

Similarly, to set a lock for a particular channel, the user selects the channel using the selection cursor and then depresses the lockout key. In Fig. 39, the channel "4 KCNC" entry in the Channel category 253 has been locked, which is indicated by the inverse video and padlock icon appearing in the window.

Program locks also may be set by title, which can be effected in several ways. For example, when the above-described FLIP or BROWSE mode of the electronic program guide is enabled, thereby causing the title of a program to be displayed along with other program schedule information in a window superimposed on the actual program signal then being received, the user can limit access to the program corresponding to the displayed program information by depressing the lockout key 45A on the remote controller 40. The user also may limit access to the currently tuned program by depressing the lockout key 45A on the remote controller 40 while viewing the program, regardless whether the FLIP or BROWSE modes are enabled. In this instance, the microcontroller first removes the program signal from the display and then accesses the schedule information database record for the program then appearing and sets an appropriate flag to indicate the program has been locked. Also, when viewing program schedule information in the grid or category listings, as discussed above and shown, for example, in Figs. 18-20, the user also can tag a program for lockout by highlighting it with the selection cursor and then depressing the lockout key 45A on the remote controller 40.

In each of these instances, the microcontroller then stores the program title in a lockout title list stored in memory along with any other titles that previously have been locked out by the user. Individual items in the lockout title list are displayed in alphabetical order in the "Locked Program" window 259 shown in Fig. 39, and the user may scroll through the list by positioning the selection cursor on the Locked Program window 259 using the up and down direction keys 43A on the remote controller in Fig. 40 and then using the left and right direction keys 43B to scroll through the list one item at a time. In order to save memory space, alternatively, the microcontroller may be programmed to set a flag or otherwise mark the particular database record containing the program schedule information for the program

that is to be locked out, and to thereafter access the database to retrieve the title information when it is to be displayed, such as when the viewer is reviewing the lockout title list in the Locked Program window 259.

Once an individual title has been locked out, the microcontroller can be programmed optionally to display an appropriate lockout icon, such as a padlock, whenever program schedule information for the locked program is to be displayed, such as in the window overlay of the FLIP or BROWSE mode, or in the various grid and category displays available in the MAIN MENU displays. The system also may display an appropriate text message if someone tries to access the program signal of a previously-locked program. Of course, once a program is locked, in all instances the microcontroller prevents access to the actual program signal (including both the audio and video portions of the program signal) until an appropriate code is entered or the lockout is removed.

Several methods can be used to block programs at their time of airing. For example, in the case of the Movie Rating, Parental Guidance and Channel categories, the schedule information database record for each program is provided with a field that corresponds to the rating, program content identifier or channel appearing, respectively, in the Movie Rating 251, Parental Guidance 256 and Channel 253 category of the Lockout screen 250 shown in Fig. 39.

During operation, the microcontroller checks the appropriate field in the database record in response to a user command to tune to or order a program before carrying out the tuning or ordering function. Additionally, the lockout code also may be used to restrict access to program schedule information. In this instance, the microcontroller also would check the appropriate field in the schedule information database record before displaying schedule information for a program.

If the movie rating, parental guidance or channel identifier in the program schedule information database record matches any one of the locked-out entries indicated in the Lockout screen 250, a Lockout Verify screen 300 is displayed in overlaying relationship with the video signal then being displayed on the television receiver, as shown in Fig. 41. The user will be prompted to enter the previously set lockout code before the system takes any further action. As an added security measure, asterisks will be displayed as the user enters the lockout code. If the entered code matches the lockout code previously entered and stored by the user as described above, the system will carry out the user request to tune to or order the program, or to display its corresponding schedule information. If the code is not recognized by the system, no further action will be taken and the user's request will be denied. In this

case, the Lockout Verify screen 300 will remain displayed on the television receiver waiting for a correct code to be entered. If no action is taken by the user, the Lockout Verify screen 300 will be removed after a predetermined time-out period, such as one or two minutes.

Similarly, in the case of lockout by title, the microcontroller also could check the title field in the schedule information database record and compare it with the list of program titles for which the user previously set a lock. If, as described above, the microcontroller does not maintain a list of the actual titles of programs locked by title, a suitable identifier can be set in a field in the database record to indicate that a program has been locked by title when the user first sets the lock, and, thereafter, the microcontroller could check that field in response to a user request to tune to or order a program, or display schedule information.

An alternative method for effecting lockout involves the use of a portion of the real-time program signal being received by the television receiver. With this method, codes corresponding to a program's rating, parental guidance category, title or channel are inserted into and transmitted along with the program signal, such as in the vertical or horizontal blanking intervals, or on raster scan lines that are not visible on the television receiver. When the program signal is received, these codes are stripped from the program signal and stored in memory. Methods and apparatus for the insertion transmission and reception of digital codes carried on a program signal are known in the art.

After the transmitted codes have been separated from the program signal and stored in memory, the microcontroller can compare them with the lockout criteria set by the user in the Lockout screen and take appropriate action, as described above.

The Setup screen 260 shown in Fig. 40 also contains a Purchase Code category 270, which allows the user to set a numeric purchase code that must be entered before any premium channels or pay-per-view programs can be ordered. The Setup screen 260 shown in Fig. 40 includes entries for setting a new purchase code and for clearing or changing a previously set password. Appropriate menus for setting, confirming, clearing or changing the purchase code are shown in Figs. 40B through 40E. Once a user sets a purchase code, the microcontroller thereafter will display a Purchase Code Verify screen in response to a user request to tune to or order a premium services channel or pay-per-view program. The Purchase Code Verify screen works in a manner similar to the Lockout Verify screen 300 in that the user is prompted to enter the previously set purchase code password before the microcontroller will tune to or order the requested program. If the correct purchase code is not entered, the microcontroller will take no further action and the Purchase Code Verify

screen will remain displayed waiting for input of the correct code. If no action is taken within a predetermined time-out period, the Purchase Code Verify screen will be removed.

The next option shown in Fig. 7 is the Channel Preference or "Favorite Channel" list option 71. By highlighting this icon and depressing the ENTER key on the remote controller 40, the user is presented with a submenu on the screen such as that shown in Fig. 8.

In normal operation, the program guide system presents channels to the user in numerical order in response to an up or down change-channel command issued by the user using one of the direction arrow keys on the remote controller. The channel number presentation sequence includes all channels offered by the cable company in the order of which they are modulated onto the channel by the operator.

The program guide system also provides the capability of selecting from among several user-defined channel presentation sequences, which are activated using one of the three "check mark" icon keys 48A, 48B or 48C on the remote controller 40 shown in Fig. 4. Each of these keys represents a preferred particular list of channels which a particular user selects and which the microcontroller stores in memory as a "Channel Preference" list, as discussed in detail below. To activate one of these preferred channel lists, the user depresses the corresponding check-mark icon key, in which case the microcontroller may display the chosen icon on the screen in the graphic overlays and full screen displays to remind the user that a particular channel preference list is being used by the system. Once a preference list is activated, the system will limit the tuning of the television receiver and the display of schedule information only to those channels that are designated in the activated viewer preference list.

To revise the content and/or sequential order of the channels in the Channel Preference list, the user enters the MENU mode of the programming guide system. To enter the MENU mode from the FLIP mode, the user twice depresses the MODE key 38 when using the remote controller 31 of Fig. 3. To enter the MENU mode when using the alternative embodiment of the remote controller 40 of Fig. 4, the user simply depresses the MENU icon key 47B.

When first entered, the MENU mode has a screen display such as shown in Fig. 6. To select the submenu for editing the Channel Preference list, the user first selects the third horizontal bar 63, which can be titled, for example, "Messages" or "Customer Service," by manipulating the cursor using the down direction arrow key, as shown in Fig. 7. The screen of Fig. 6A is thereby displayed. The user then selects the second icon 161 appearing in that bar, indicated with a check mark, which corresponds to a "Viewer Preference" mode, by

highlighting the icon using the direction arrow keys and again depressing the ENTER key. This action will cause the microcontroller 16 to display a Viewer Preference submenu such as that shown in Fig. 7. By selecting the Channel Preference or "Favorite Channel" entry 71, the user enters the Channel Preference submenu, shown in Fig. 8. If the user has not already done so, he would then depress the particular check-mark icon key on the remote controller 40 of Fig.4 to create or revise the particular channel preference list.

In the Channel Preference menu shown in Fig. 8, a list 80 of all channels available on the particular cable system is displayed on the left side of the television receiver screen, labeled "Choices" in Fig. 8, and the viewer's preferred list 81, designated "Selected" in Fig. 8, is displayed on the right side. If a particular code, such as an END or "-1" symbol appears in the first (uppermost) position 82 of the viewer preference list 81, the system displays information for all channels in numerical order in all modes of operation. This is the default mode of the system.

By selecting channels in sequence from the available list 80 and placing them in the desired order in the preference list 81, the user can select a subset of channels and/or rearrange the default sequence in response to a channel up or channel down command from the user. This is accomplished by highlighting a channel in the available list 80 using the up and down direction arrow keys on the remote controller 40 and depressing the ENTER key 44, which stores the entry temporarily in a buffer.

The microcontroller 16 stores a list of all channels previously entered in the viewer preference list 81. As a particular channel is highlighted by the user when navigating through the available channel list 80 displayed on the left side of the television screen, a window 84 appears adjacent to the particular channel highlighted by the user. If the particular channel already appears in the viewer preference list 81, the system displays a "DELETE" message in the window 84 as a reminder that the channel was previously selected from the available channel list 80 and can only be deleted from the list 81, which is accomplished by depressing the ENTER key 44. If the particular highlighted channel in the list 80 was not previously selected, the system displays a "SELECT" message in the window 84 as a reminder that the particular channel will be selected for addition to the viewer preference list 81 if the user depresses the ENTER key 44. The microcontroller 16 inserts a selected channel at the bottom of the list 81. In this manner, the user can select or delete channels from the viewer preference list in any desired order.

The available channel list 80 may also be provided with categorical entries 83, such as movies, news, sports or children's shows. The user may also highlight any of these

entries and put them into the viewer preference list 81. If the user does include a category in his viewer preference list 81, when the user issues channel up or down commands, the system will display, in sequence, first the user's selected preferred channels in numerical order and then all channels having a program whose content corresponds to the selected category or categories at the time.

Once the user has revised the channel preference list 81 in the described manner, the microcontroller 16 will follow the stored user-specified channel sequence in response to a change-channel command made by the user employing one of the direction arrow keys. To activate the viewer preference list, the user depresses one of the three check-mark icon keys 48A, 48B or 48C on the top of the remote controller shown in Fig. 4. The viewer preference list can be used to selectively limit tuning of the television receiver or display of schedule information in any of the operating modes of the electronic program guide. In the present embodiment, once a preference list is activated, the system will limit the tuning of the television receiver and the display of schedule information in the FLIP, and BROWSE modes, as well as in the grid category and channel listings in the MENU mode, only to those channels designated in the activated viewer preference list. The tuner can not be tuned to, and no corresponding schedule information can be displayed for, any channel not entered in the viewer preference list when it is activated. In this regard, it should be noted that setting a key lock access in the Parental Guidance 301, MPAA 308 or Channel Block 303 categories produces a different result than when using other display criteria, such as the Channel Preference List of preferred channels discussed above. Thus, while a key lock access will prevent audio and video program information, but not schedule information, from being displayed or ordered absent entry of an authorization code, if a particular channel is included in the Channel Preference list and also has a key lock access activated in the Channel Block category 303 of the Key Lock Access mode, that channel or its corresponding schedule information will not be displayed at any time.

To deactivate a previously selected viewer preference list, the user toggles the appropriate check-mark icon key on the remote controller 40 of Fig. 4. Once deactivated, the system defaults to displaying and tuning all available channels, as well as displaying schedule information for all available channels.

Alternatively, the viewer preference list 81, if activated, can be used to control tuning and display of schedule information only in selected modes, such as only in the FLIP mode, thus allowing the user to tune and view corresponding schedule information only for

those channels entered in the preference list 81 in the FLIP mode, while viewing all channels and corresponding schedule information in all other modes.

In this latter configuration, as well as in the instance where no channel preference list is activated and the system is in default mode, if a channel appears in the viewer preference list 81 that corresponds to a service not subscribed to by the user, the microcontroller 16 causes an ordering submenu to appear instead of displaying a program signal along with the graphic overlay, as shown in Fig. 9. This submenu indicates to the user that he does not currently subscribe to the selected service, and then asks the user if he would like to order the service. If the user responds affirmatively, the program schedule system takes the user to another ordering submenu to confirm the user's request, as with impulse ordering.

The program guide also may be configured with a Locator screen 201, as shown in Fig. 37, which aids the viewer in channel selection and definition of a favorite channel list. The Locator screen 201 displays all available channel numbers grouped according to the source of the program information appearing on any particular channel at any particular time, e.g., broadcast, cablecast, pay-per-view, near video on demand, satellite, or other source of program material. Thus, the Locator screen 101 can be used to locate any particular channel or service because the groupings provide a quick and efficient method for scrolling through the list of available channels. The channel numbers also may be grouped according to other criteria, such as program category, program content, program rating or other content-based standard, time of availability, numerical order, or other logical grouping.

In the example shown in Fig. 37, the user navigates within the Locator screen 201 using the direction keys 43A and 43B on the remote controller 40. The right and left direction keys 43B move the selection cursor within the category rows, while the up and down direction keys 43A are used to select a particular category. From the Locator screen 201, any particular channel can be selected for viewing by positioning the selection cursor on the desired channel and depressing either the enter key 44 or an optional tune key (not shown) on the remote controller 40.

In addition to aiding in channel selection, the Locator screen 201 also provides the user with the ability to conveniently define favorite channel lists. To do so, the user first moves the selection cursor to the desired channel by using the direction keys 43A and 43B or numeric digit keys 42 on the remote controller 40, and then depresses a favorite channel key 46A provided on the remote controller 40, which causes the display to change in some manner or characteristic as an indication that the channel has been selected as a favorite channel, such

as by changing the color of the channel identification text or the text background, by displaying an appropriate icon or by some other appropriate identification scheme. In the remote controller 40 shown in Fig. 4, the pound key "#" can function as the favorite channel key.

Also, if multiple favorite channel lists are being used, the user would depress the appropriate favorite channel key on the remote controller to select a particular list before depressing the favorite channel key. For example, as discussed above, the remote controller 40 shown in Fig. 4, has three color-coded check-mark favorite channel keys 48A, 48B and 48C, which provide for at least three individual favorite channel lists for three individual users. Different identification characteristics could be displayed on the Locator screen 201 to indicate that a particular favorite channel list is selected. For example, the icon or image used to enable a favorite channel list on the remote controller, such as the check mark key 48A used on the remote controller 40 shown in Fig. 4, could be displayed on the Locator screen 201, as well as other screens of the program guide, when a favorite channel list is enabled. Alternatively, the color of the displayed text or background could be changed to match the color of the selected favorite channel key.

The Locator screen 201 may be accessed via several paths. For example, it may be included as a virtual channel that is conveniently positioned in the channel-tuning sequence, such as between the highest and lowest available channel numbers -- for example, a virtual channel 0. To the user, such a virtual channel appears to be a conventional channel. However, it requires no additional bandwidth as a carrier. For example, it can be digitally produced at the subscriber station or included in an appropriate blanking interval in existing bandwidth frequencies. In this manner, the virtual channel is accessible either by entering the corresponding channel number using the numeric digit keys 42 on the remote controller, or by using the up and down direction keys 43A to wrap around from the highest to the lowest channel number, or vice versa. As shown in Fig. 38, it also may be desirable to provide a suitable identifier, such as an icon or text message 210, in the MAIN MENU display 215, from which the user could access the Locator screen 201 simply by highlighting the identifier 210 with the selection cursor and depressing the enter key 44 on the remote controller 40. Alternatively, the remote controller may be provided with a key corresponding to the Locator screen 201 which would cause the microcontroller to display the Locator screen 201 when the user depressed it.

Virtual channels may be positioned at any other desired location in the channel-tuning sequence, and may be used to provide a variety of functions in addition to, or as

alternatives to, the Locator screen 201. As examples, the user could access a near-video-on-demand (NVOD) service, a text- or graphics-based information retrieval service, or a digital music service (DMX) through the virtual channel interface. As with the Locator screen, these virtual channels can be accessed as a channel by sequencing with the direction arrow keys, direct digit entry, or by using a last channel function. They also can be accessed as a menu in the menu mode. When accessed as a channel, these virtual channels have the functionality of a channel, and when accessed as a menu, they function as a Menu feature -- i.e., whatever channel was tuned prior to accessing the Menu screen shall remain the currently tuned channel.

Ordinarily, each of these services comprises a plurality of channels. For example, an NVOD service may function by staggering the start times of one movie across several channels, such that the user of a hypothetical eight-channel-per-video NVOD service would wait, at most, 15 minutes for a two-hour film to begin. As another example, a ten-channel video game service may function by delivering ten video games, one per channel.

In the past, this multiple-channels-per-service approach has resulted in user inconvenience. As an example, when provided with a package of services including television channels 1-39, DMX channels 40-46, NVOD channels 47-55, and information retrieval channels 56-70, a television-viewing user surfing through the channels using the remote controller 40 UP key 43A would be faced, at channel 39, with pressing the UP key 43A 36 times to return to channel 1 at the beginning of the television channel sequence.

That inconvenience is ameliorated by the use of virtual channels. A virtual channel that identifies the channels available in each particular service could be positioned in the channel tuning sequence at the location of the first channel in the service or, alternatively, could be assigned the channel number that immediately precedes the first channel in the service. In the previous example, virtual channel 40 would provide access to the DMX service, virtual channel 47 would provide access to the NVOD service, and virtual channel 56 would provide access to the information retrieval service. As explained more fully below, a user tuned to channel 39 in such a system would press the remote controller 40 UP key 43A only five times to arrive at channel 1, intermediately arriving at channels 40, 47, 56, and 71.

In one embodiment, a user may not directly select the individual channels comprising a service accessed via a virtual channel; instead, the user must first tune to the virtual channel and then affirmatively choose to enter the service associated with the virtual channel, for example, by pressing an OK or ENTER key on a remote controller. As a result, virtual channels, and not the individual channels comprising the services, are adjacent to one

another in the channel tuning sequence. In this case, the system operates to display the corresponding virtual channel in response to a user command to tune to any channel offering a particular service. Thus, in the above example, in response to a user command to tune to any of channels 47 through 55, the system would display the virtual channel 47 associated with the NVOD service. Alternatively, the system could be configured to allow the user to access any channel directly without having to enter the virtual channel. In yet another embodiment, once the user enters the virtual channel for a service and selects a channel, he is thereafter permitted to access each channel in the service by using the up and down keys on the remote controller 40 as he would do in a normal tuning sequence. However, the system will automatically limit the tuning sequence only to those channels in the service, including the virtual channel. Thus, where the virtual channel is 40 and the service channels are 41, 42, 43, 44, 45 and 46, once the user selects and tunes to a service channel through the virtual channel, e.g. channel 42, subsequent use of the up and down keys will allow the user to sequence through the channels. Pressing the UP key seven times would change the channels as follows: 43, 44, 45, 46, 40, 41, 42. The user exits the service by selecting the virtual channel 40 and then selecting the EXIT function.

Virtual channels also provide a convenient means for accessing information provided to users in the form of data feeds. As discussed more fully below, in addition to program schedule information, users may also be provided access to data feeds containing information on various topics such as news, weather, sports, stock quotes, etc. Each of these topics may be divided into categories for convenient access. For example, a virtual channel may be provided indicating the different categories of sports information available and the channel number to enter to access each category. In addition to using virtual channels to access different services, virtual channels may be used to provide convenient access to multiple services grouped according to category of information. For example, Fig. 55, discussed more fully below, illustrates a virtual channel for sports information that provides access to both real channels such as ESPN and other virtual channels used to provide access to sports related data feed information. In addition, it is also possible to provide access to sports video games received through the SEGA channel using virtual channels. By incorporating the SEGA game hardware into the EPG system of the present invention, the current user interface for the SEGA channel may be replaced with multiple virtual channels for the different games available. In this manner, the different SEGA games available at any given time through the SEGA channel may be distributed throughout the EPG based on the category of the game.

In addition to Channel Preference or Favorite Channel keys, the remote controller 40 can also be supplied with a number of user-activated category preference icon keys, e.g., movies, sports, or children's programming. The system can be adapted to present to the user only those programs meeting particular preference category when it is activated by the user. As with the Channel Preference icons, the microcontroller may display the icon corresponding to the activated preference category to remind the user of the currently activated mode of system operation.

The question mark icon 162 at the far right of the third horizontal bar in the menu of Fig. 16 identifies a program guide system "Help" mode in which information explaining the operation of the system is displayed for the user. Again, by manipulating the cursor using the appropriate keys on the remote controller, the user can select this mode. Once selected, the next submenu appearing in the Help mode asks the user to identify the particular portion of the system about which the user would like to view Help information.

The icons appearing in the last horizontal bar of the MENU mode identify certain interactive and/or other types of information services which the programming system, acting as a gateway, makes available to the user as shown in Fig. 17. By manipulating the cursor, the user can select any one of the identified services, as shown in Figs. 31-35.

For example, if the user initially selects the "X*PRESS" icon appearing in the last horizontal bar, he is presented with a submenu such as that shown in Fig. 31. Using the direction arrow and enter keys on the remote controller, the user selects one of the three entries appearing in the display of Fig. 31. Once a particular entry is selected, the electronic program guide connects the user to the selected service and passes control to the particular service application software, as shown in Figs. 32-35.

Alternatively, the remote controller 40 can be supplied with a plurality of content-specific keys corresponding to a plurality of content-specific categories of programming, e.g., a Sports key, News key, Movie key, etc. When the user depresses a content-specific key, a content-specific mode is initiated. In Fig. 4, the remote controller is equipped with a Sports key 49. If the user depresses the Sports key 49, the microcontroller will limit the display of programs and/or program schedule information to those that are sports-related. The microcontroller will block all other programming or schedule information from appearing on the television receiver. The microcontroller can be adapted to distinguish programs and schedule information that are sports-related by examining an appropriate code associated with the program or schedule information.

As discussed above, coding can be accomplished using any number of methods, such as by including an appropriate code in the vertical blanking interval of the program signal, or in an appropriate memory location in the database record of the program schedule information, or if the schedule information is being received on a broadband network, by including it in an appropriate blanking interval. The user activates a content-specific mode by depressing the appropriate content-specific key in any mode of operation of the electronic programming guide, including the aforedescribed FLIP, BROWSE or MAIN MENU modes, as well as when no schedule information is being displayed and only a program signal is visible on the television receiver. Once a content-specific mode is requested by the user, the microcontroller immediately and directly enables the content-specific programming criteria, and maintains it for all operating modes of the guide until disabled, which can be accomplished, for example, by toggling the Sports key 49.

Instead of a dedicated content-specific key, such as Sports key 49, the system may be configured with a single, generic content-specific key, which, when activated, would cause the microcontroller to display a content-specific menu containing a list of all content-specific categories available to the user. The user then could highlight a particular category by manipulating the selection cursor using the direction arrow keys on the remote controller and select it by depressing the ENTER or OK key 44. As an alternative to using a content-specific key on the remote controller, access to the content-specific menu can be effected by providing an appropriate identifier in another menu screen of the electronic guide, such as in the LOCATOR, SETUP or MAIN MENU screens.

In addition to blocking all non-selected content-specific programming when a particular content-specific category has been selected, the microcontroller can be programmed to enable all added-value programming or services that are specially related to the selected content-specific category. For example, if the user activates a Sports content-specific mode, the microcontroller, in addition to allowing only sports programming or schedule information related to sports programming to be displayed, will proactively seek out and enable all sports related added-value services, such as related trivia or video games, up-to-date scores while a game is in progress, team schedules, replays of prior games of the selected teams or players, ticket or souvenir purchasing, etc. Thus, the information available from the programming or service can be integrated into the environment of the electronic program guide. Rather than simply passing control to another service as described above, in this manner the electronic program guide would function as a system integrator or interface to combine the available added-value information into a package within the electronic guide environment, thus

essentially creating a series of modular electronic program applications corresponding to a variety of available content-specific categories.

The Setup screen shown in Fig. 40 also includes a Text Location category 275, which contains the textual entries "Bottom of Screen" and "Top of Screen." By navigating to the Text Location category 275 using the up and down direction keys 43A on the remote controller 40, and to either the "Top" or "Bottom" entries in that category using the left and right direction keys 43B on the remote controller, and then depressing the enter or select key 44, the user can control the position of the overlay windows used to display information in various operating modes of the electronic program guide. The Setup screen of Fig. 40 provides the user with two positional choices: the top or bottom of the screen. Depending on the modes of operation of the program guide, it may be desirable to provide the user with more positional choices in viewing area of the television receiver, or to provide the user with the ability to choose a different position for information displayed different operating modes.

One of the novel features of the disclosed invention is the textfit system. The preferred embodiment of the text fit system includes an interactive computer program used to edit the program listings data before it is transmitted to the user and stored in memory. The interactive system operates as follows: unedited (or partially edited) program listings information is loaded into data a processor. The data includes program titles, program schedule times, duration, category, as well as additional descriptive information dependent on the type of program. For example, for movies the data includes the MPAA rating, year of the movie, whether it is in black and white, and a list of starring actors and actresses.

The data processor extracts only the program title data which includes television program titles as well as movie titles, sporting events and titles for other special events. Based on the duration of the program, the data processor first analyzes the listings data to determine what grid size listings are needed for each title. Thus, a two hour movie could require four different edited titles to fit into each of the four different size grid cells (30, 60, 90, 120 minutes). The data processor then determines how much space is required to display the title based on its character length. If the title is to be displayed in the program schedule grid using a proportional font and character to character kerning, the data processor may also account for these factors in determining the space required to display a title. The determination would than be based on the number of pixels required for the particular combination of characters in the title. The amount of space available for display of a title depends on the size of the grid cell and the space required for display of icons, when activated.

If the data processor determines that a full title requires too much space to fit into one or more grid cells, the title is then presented to the editor using a suitable display device connected to the data processor, such as a CRT. The editor is then queried to alter the title so that it will fit in the allotted space. If the title must be edited for more than one cell size, the editor is queried to edit each of these separately. In the preferred embodiment of the interactive program, the editor is shown in real time whether the edited title will fit in the designated grid cell.

In the preferred embodiment, two lines of text are displayed in each grid cell of the program listings. The title, as edited, appears on the first line, and if necessary, continues onto the second line. The decision to wrap-around to the second line is based on whether natural breaks exist in the title such as spaces between words, commas, periods, hyphens, etc. These are standard techniques used in word processing software routines. The editor may also be queried to edit a title in the situation where the full title will fit on the allotted two lines, but a hyphen is required because there are no natural breaks in the title.

Prior to querying the editor to shorten a title, the data processor compares the title with a stored library of shortened titles to determine if the title had previously been shortened while editing another listings database. Each time changes are made by the editor to a title, the shortened title is added to the library. It is apparent that this process of building a library of shortened titles greatly reduces the manual input required.

A flow chart illustrating the process by which the text fit system operates is shown in Fig. 42. The chart illustrates the operation of editing a listing for display in a program grid for a single platform, but operation is the same for all platforms.

Text editing may be necessary in other situations besides that where multiple size grid cells are used for display of the same title. For example, the disclosed program guide may run on several different platforms, with each one having different constraints and grid cell space availability. Some may not display the text in proportional fonts and some may have other limitations reducing the available space. Thus, in the preferred embodiment the interactive program would request edits for all platforms for which they required at the same time. In addition, editing of text may be required for display modes other than a grid of program listings. For example, in the "Listings by Channel" display of fig. 20, programs are listed on an entire, fixed-length line, but the length of the line may vary from platform to platform, so that the text fit system may be employed for the purpose of editing listings for the different platforms in this display mode as well. The space available for the display of text will also depend on how much space is reserved for icon display. The same process as that

shown in fig. 42 would apply, except that there would be no need to determine what grid sizes are needed because a fixed length line is used for display rather than multiple sized grid cells.

It will be apparent to those of skill in the art that the disclosed text fit system has applications beyond that of title editing alone. The system may be easily modified to provide editing of messages, "i" screen storylines, pay-per-view promotional copy, and similar text messages so that they will fit into the designated space available for display of the text. In fact, the system may be used to edit any text for display in the disclosed program schedule system.

The computer program for the microcontroller 16 may also include a schedule for the display of varying background views upon which the program schedule information is overlaid either partially or in a full screen display. The background views may be stored as bit maps in memory or in another storage medium, such as an optical storage device. For example, the microcontroller 16 may be programmed to issue a command to the VDG every morning at 6:00 AM to display a sunrise in the background. The background may then be changed accordingly throughout the day to, for example, a blue sky or a nighttime view. It also may vary, e.g., by time of day, day of week, month, year or season. The mood background also could change depending on the particular category of programming that the user is watching or to which selected schedule information pertains. The mood background also may be adapted to display scenes that reflect the particular viewing area in which the user is situated, like the Rocky Mountains, or Mt. Rainier, etc. It also may be possible to display standard scenes, such as an ocean or forest scene. Moreover, the audio background also could be adjusted to relate to the particular mood background then being displayed. In addition, different background views may be used for holidays and special events, such as Christmas, Fourth of July, Superbowl Sunday, etc. The purpose of the background views is to help ease the monotony of viewing program listings. The microcontroller 16 could be adapted automatically to coordinate the display of the mood background. The user also could be given the ability to choose from among various mood background displays by adapting the microcontroller to display an appropriate mood option menu that lists the mood background options available to the user and allows the user to select one or more by manipulating the selection cursor. Access to such a mood option menu could be achieved by supplying an appropriate identifier, textual or visual, in an appropriate menu of the system, such as the LOCATOR or SETUP screen.

Additionally, the electronic program guide could be configured to store a unique digital identifier for each program along with its schedule information and later use the

identifier -- e.g., by transmitting it -- to indicate to a recording or storage device, such as a video recorder, that the user wishes to record the program. The program guide could also use the identifier to automatically control operation of the video recorder. The electronic program guide could also be configured to use other stored schedule information for this purpose.

Operation of the interactive home shopping feature of the present invention may be explained with reference to Fig. 43. Fig. 43a illustrates a "by time" screen of the EPG listing the different programs scheduled to air at a particular time on the different channels. As shown in Fig. 43a, certain listings are provided with an asterisk or "star" icon 401 indicating that a product or service associated with each of the listings is available and may be ordered remotely by the user. The remote control unit 40 discussed above may be further configured with a star button used to order products and services. Alternatively, the existing star key on the keypad 42 may be used. The particular icon used to designate that the indicated listing has an associated product or service available for purchase is not part of the invention -- any convenient symbol may be used.

The screen shown in Fig. 43a indicates that two listings, "Full Metal Jacket," and "Beverly Hills Cop III," include associated products or services. Upon depressing the star button on the remote control while the cursor is highlighting the program listing for "Full Metal Jacket," the format selection screen shown in Fig. 43b is displayed. This screen informs the user of the particular product or service available and the various options and/or formats available, as well as the price of the different options and formats. As shown in Fig. 43b, the left and right arrow buttons 43B on the remote control unit 40 are used to scroll throughout the different formats. As the user scrolls, the price displayed automatically changes to reflect the price for the currently selected format. Upon selection of the particular product format (by depressing the "OK" or enter key 44 on the remote control unit 40), i.e., a VHS format cassette, the user is presented with the screen shown in Fig. 43c to select the payment method and method of shipment. The user may scroll through the different payment methods which may include various credit cards as well as the option to add the purchase price to the user's bill for program services. At the bottom of the screen, the user enters his credit card number and expiration date. The user may also scroll through various methods of shipment, and the total price changes accordingly based on the different shipment methods. Upon selection of the payment and shipment methods, the user is presented with the screen in Fig. 43d to review and confirm the order. A purchase code may be used to prevent unauthorized persons from ordering products or services as shown in Fig. 43e. The purchase

code may be selected in advance in the same manner as program lock-out code discussed above.

The screen in Fig. 43d may be used where the user has previously entered his address and phone number. The user may have previously entered this information in advance using a set-up screen to input all the necessary information upon first use of the product ordering service. The setup information may also include one or more credit card numbers so that when a product is ordered, the user need only select a credit card from a list previously entered. Alternatively, the user's address and phone number may be extracted from the program services billing system.

The star icon may also be used to indicate that more than one product or service associated with the television program is available. Fig. 44 illustrates one embodiment of a screen that may be presented to the user upon depressing the star button while the cursor is highlighting the program "48 Hours." As shown in Fig. 44, both a transcript and tape (VHS or Beta format) are available. Using the arrow buttons 43B on the remote control unit 40, the user highlights the desired product and depresses the "OK" button to order the product.

Products and services may be ordered from any of the different modes of the EPG by including the star icon in the program schedule display in each of the different modes of the system. Fig. 45 illustrates use of the star icon in connection with the flip mode of the system discussed above.

There are many potential applications for this type of product ordering service. In addition to ordering a videocassette or transcript of a program, various ancillary products may similarly be ordered, such as tee shirts and other apparel, books, movie soundtracks, toys, etc. The disclosed product ordering system is especially useful in conjunction with programs that are copy-protected, such as PPV movies. These programs cannot be recorded using a VCR so that the disclosed product ordering service presents a powerful marketing tool and permits users to order their own, professionally produced, licensed copy of, e.g., a PPV movie simply by depressing a button on their remote control device. One example of a service that can be provided is the ordering of tickets for television programs with live audiences. Program listings for such programs as game shows and talk shows could utilize the star icon to order audience or participant tickets for the show. The star icon may also be used with the program listings for local sporting events to order tickets for the listed event as well as future events.

The use of the disclosed product and service ordering capability need not be limited to television programs. For example, if the cable system operator or other program

provider provides music as well as television channels, products and services associated with music programs may also be ordered through the guide. Fig. 46 illustrates one embodiment of a screen that may be used for ordering a product or service associated with a music program. Products that may be ordered include a CD or cassette tape of the song or album. The ordering service may also be used to order tickets to an upcoming concert of the artist that performs the selected music program.

The use of the EPG thus presents a new vehicle for marketing program-related products and services capable of reaching a very large audience, including those who would not normally tune to existing home shopping channels.

Product and service ordering may be readily implemented in the EPG of the present invention. The different display screens that comprise the EPG are controlled by the microcontroller 16, which accesses the program listings data for each of the programs. If the data indicates that a product or service associated with a particular program is available, the microcontroller 16 will display the star icon whenever the particular program listing is displayed in the different modes of the EPG. The microcontroller 16 also controls the display of user-selected options in the EPG so that when a particular listing is highlighted by the user, the microcontroller 16 displays appropriate ordering information when the user depresses the star key on the remote control unit 40 so that correct product or service information is displayed.

The ordering of services is discussed above in connection with Fig. 9 regarding the ordering of premium services and pay-per-view events. Products may be ordered in a similar manner using either a telephone line, coaxial cable, optical fiber, or wireless transmission as the return path for placing user orders. There are many techniques known in the art that may be used for providing information on products and services ordered by a subscriber to a cable television service at a remote location for processing at a central location. For example, the same techniques used for billing subscribers for pay-per-view events may be applied to product ordering as well. In one embodiment, the microcontroller 16 stores subscriber orders in memory for subsequent transmission using the subscriber's telephone lines. The microcontroller 16 is programmed to dial the central ordering location to place subscriber orders. Typically, a toll free "800" number is utilized for this purpose and calls are placed at times when the subscriber is not likely to be using the telephone. The microcontroller 16 may be programmed so that orders are accumulated throughout the day and a call is placed once per day to transmit all the accumulated orders.

Another possible technique for placing orders is to use the cable itself. This technique may be used in both one-way and two-way cable plants. In a one-way cable plant system, orders may be stored at the user location in a set-top box provided by a local cable system. The set-top box may then be polled by the cable head-end using techniques known in the art to determine if any orders are stored for transmission to the cable head-end. If orders are present, they are provided to the cable head-end for processing.

A two-way cable plant is most advantageous if real-time ordering capability is desired. Using the return channel, orders may be placed and immediately transmitted upstream to the cable head-end where they can be processed or forwarded to a separate processing center. In this manner, orders may readily be processed the same day and shipped to the user via overnight courier.

Another possible technique is to control the call-in of orders from subscribers from the central location. For example, the cable head-end could poll the subscribers and program the set-top boxes to call the central location at a particular time so as to stagger the call-in times and avoid overloading the processing center. Finally, it is also possible for the cable head-end to connect to each user's set top box via telephone lines and call-out to each viewer sequentially to determine if any orders are pending.

It is also possible to maintain the product ordering feature entirely separate from the cable system or other program provider operations. The entity providing the EPG may maintain its own processing equipment at the cable system head-end or other program provider location so as to receive order requests directly from users without the need for any pre-processing by the cable head-end. User requests identified as product orders may then be diverted directly to the EPG provider's processing equipment. This type of system architecture allows for more centralized management of a nationwide product ordering system.

The information on each of the products and services available may be provided to the users in any of a number of ways. In one embodiment, the database of program schedule information stored at each user location may include all the information for each product and service -- a description of the product(s) or service(s), price, and any other information required. The disadvantage of this method, however, is that if a large number of programs include products and services available for ordering, the demands on the system memory are great. Another method is to standardize the products and services available so as to include in the database only a minimal amount of information necessary to identify the type of product or service. For example, if only videocassettes and transcripts are available, the database need only include a flag for each listing indicating whether a videocassette, transcript,

or both are available. Further simplification is possible if all transcripts and all videocassettes are priced the same. The screens illustrated in Figs. 43-46 may then be standardized screens for all products so as to conserve memory space.

It will be recognized by those of ordinary skill in the art that many variations are possible. To provide more flexibility, different categories of products and services may be established for different types of programs, such as movies, news programs, sports, pay-per-view, etc. The microcontroller 16 may then be configured to select the product or service information displayed to the user based on the type of program. In this manner, when the user depresses the product ordering icon on the remote control, the microcontroller 16 determines the type of program displayed in the program guide and selects the appropriate ordering screens for display. Similarly, with regard to price, different categories of prices may be set. The microcontroller 16 may then read the price category for the product from the database and display the appropriate price for the product in the screens 43-46.

An alternate embodiment of the disclosed product ordering system may be implemented as follows. Rather than indicating the availability of a product or service only in association with the program listings stored at the user location, product availability may be indicated when the user is not in one of the program schedule display modes by overlaying the star icon on a program display signal if there is a product or service associated with that program. In this manner, products and services associated with programs not included in the program schedule information database stored in DRAM 18 may also be made available to users. This embodiment is especially useful in connection with commercial advertisements and permits the user to place an order for the product or service being advertised using the remote control device 40. Alternatively, the user may simply request to be placed on a mailing list to receive additional information about the product or service being advertised as well as other related products and services.

This alternate embodiment (which may be used in conjunction with the above-described embodiment) may be implemented as follows. The received program signal for the commercial or other program may include the information about the product or service associated with the program. The information may be included in the vertical blanking interval (VBI) of a standard analog television signal, a technique well known to those of ordinary skill in the art. Similarly, the information may be included in an in-band digital channel for programs delivered in digital form. One advantage of including the information in the VBI or an in-band digital channel is that it eliminates the need to consume memory space at the user location to store product and service information.

The modified system illustrated in the block diagram of Fig.47 is one embodiment of a system that incorporates a product ordering system using the VBI into the program schedule system of the present invention. In this modified system, a second receiver 30 is used to receive the television channel signal tuned by tuner 28 under control of microcontroller 16. The signal is then provided to a VBI decoder 30A which decodes the data contained in the VBI of the received television signal. This data is then provided to buffer 15 and microcontroller 16 in the manner described above for the program schedule information. The microcontroller 16 then determines whether the currently-tuned channel is displaying a program for which a product or service is available as indicated by the data in the VBI. If there is a product or service available, microcontroller 16 causes the product availability icon to be overlaid on the television signal. In a preferred embodiment, the currently-tuned television signal comprises a commercial advertisement and the product or service available is associated with the commercial. Either a one-step or multi-step ordering process may be utilized. For example, in the simplest embodiment, only a single product, i.e., a product brochure, may be available. In this case, the microcontroller 16 may be configured to cause the video overlay device 25 to display a standard on-screen message such as "Press * to receive a brochure describing this product." This embodiment assumes that the user has previously provided his name and address or that the information is extracted from the program services billing system as discussed above. Alternatively, a multi-step process similar to that described above may be implemented. Upon depressing the ordering icon key, the microcontroller 16 may extract additional information from the VBI describing the product or service and cause the video overlay device 25 to display it on the receiver. The microcontroller may then present a series of screens to the user similar to those shown in Fig. 43 to obtain the information required from the user. In this case, however, the information for composing the screens is obtained from the program signal rather than the stored program schedule information. It is also possible to store the screen formats as bit maps in memory and use the information from the VBI to complete the information in the screens.

If the user chooses to order the product or service, the microcontroller receives the request and may process it as follows. In the simplest embodiment, the microcontroller may simply time and channel stamp the request. By providing the time of the request and the channel tuned by the user at the time of the request, the system operator may determine the commercial or other program the viewer was watching at the time the product or service was ordered and thus provide the correct product or service to the user. Alternatively, in a more sophisticated system, the microcontroller 16 may extract from the VBI or in-band digital

channel product identification information and include the information with the user's request to identify the product or service ordered. The user's request may then be provided to the cable head-end and processed in any of the manners described above in connection with products and services associated with a program listing.

Operation of the on-demand information access feature of the EPG may be described with reference to figs. 48 - 58. These figures illustrate how data feeds may be used in an embodiment of the sports category mode of the present invention. The addition of data feeds to the EPG of the present invention greatly increases the value of the television as an information source because it permits users to obtain on-demand access to selected categories of updated information. The data feed information may also be combined with program schedule information, television program signals, and remote product ordering capability to provide a multimedia informational and merchandising system. The use of data feeds, e.g., data received in the VBI of a television program signal, in conjunction with the remote product ordering feature has already been discussed above. The description that follows provides another particularly useful application of data feeds -- sports information -- and particularly updated information on the status of sporting events in progress.

The sports mode described in the following paragraphs differs from that previously described which provides information only on sports related television programs from the database of program schedule information stored in DRAM 18. In contrast, the improved sports mode described in the following paragraphs provides access to sports related program schedule information, updated game scores, detailed team-specific and other sports information, and interactive services such as the purchase of sports merchandise and access to sports video games. Rather than providing the user with unwanted program schedule information on programs not of interest, the user is instead provided with a content specific user interface that provides access not just to television programs but also to other services within the same content category.

For example, rather than providing a menu that presents only program schedule information on sports programs, a menu may be provided to users consisting of the following: a list of the channels dedicated to sports programming and the current and upcoming programs on these channels, a list of current and upcoming sports programs on other channels, virtual channels for access to data feed information on specific sports, teams, scores, late-breaking sports headlines, etc., virtual channels for access to interactive games, and a home shopping service for access to sports related merchandise. As discussed below, vast amounts of information are available on any given topic. Much of the information is not suited for

distribution in the form of a television program due to the expense of producing television programs and the limited interest in such information. Through the use of virtual channels, however, content not of interest to the viewer (i.e., non-sports television programming) may be replaced with virtual channels for detailed information on e.g., each professional sports team and other content provided by different services. By aggregating content on a subject basis rather than a service basis, the utility of the television as an information terminal may be greatly enhanced. The present invention relates to an improved EPG that provides viewers access to these additional, non-program services in the same manner as television program services in order to facilitate navigation through the additional content. The following discussion illustrates one embodiment of an improved EPG of the present invention that provides subject-based aggregation of content. Sports information is used as an example, but content-based aggregation may be used for any category of television programs and other types of information provided.

Fig. 48 illustrates a "What's Hot Today.." screen 500 of one embodiment of the improved sports category mode. The screen provides the user with easy access to several different sources of sports related information. Line 501 displays program schedule information for sports related programs. Line 502 displays information on important games and line 503 displays information on news items of particular interest. Finally, line 504 is used for displaying information on products available for remote ordering. For each of the lines 501-504, the user can view additional information by depressing the left and right arrow keys 43B of the remote control unit 40 as indicated by the left and right arrows on either end of each line. The information for lines 501 and 504 is obtained from locally stored program schedule and product information while the information for lines 502 and 503 (and optionally 504) are obtained from data feeds received at the user location as discussed in greater detail below. In this manner, up-to-date information may be immediately presented to the user. For example, if the Phillies v. Pirates game were in progress or concluded, the line may additionally include the current score and inning. The boxes 505 at the bottom of screen 500 indicate that promotional information concerning each of the identified companies or products is available through the EPG. Using the up/down and left/right arrow keys 43A and 43B, the user may navigate to each box and access the information.

Screen 500 may be used as the default screen upon entering the sports mode of the EPG of the present invention. The default screen may be configured by selecting information according to user preferences. For example, the user may be requested to set his preferences for different sports and different teams by assigning numerical rankings for, e.g.,

professional baseball, professional football, professional hockey, professional basketball, college football, and college basketball. Each of the lines for the default screen 500 may then be selected by comparing the relative user rankings of the different information available for display in each display line. For example, the Phillies v. Pirates game displayed in line 502 may have been chosen because the user designated professional baseball as his favorite sport and the Phillies as his favorite team. It will be recognized by those of ordinary skill in the art that a screen such as that illustrated in Fig. 48 may be configured according to user preferences by implementing any of a number of techniques known in the art such as the use of software agents to intelligently extract information of interest to the user. One way to configure a default or "home page" screen is to keep track of the channels viewed and other services accessed through virtual channels and to provide more content for those channels and services more frequently accessed. In this manner, each viewer is provided with more information tailored to his/her particular preferences rather than presenting each viewer with the same screen.

Fig. 49 illustrates an alternate embodiment of a Sports mode screen 510 which may also be used as the default screen when the sports mode is entered. Screen 510 also provides easy access to both locally stored program schedule information and information from a received data feed. The "Today's Games" feature 511 provides access to screen 520 in Fig. 50 which lists all the games for various sports, the channel on which the game may be viewed, if it is televised, the current score and time remaining if the game is in progress, or the scheduled time if the game has not yet begun. In addition, the "i" icon is used to indicate additional information concerning the particular game is available, such as score by quarters (for a basketball or football game), score by inning (for a baseball game), high scorers, etc.

By combining stored program schedule information with information obtained from a data feed to compose screen 520, information on games not being televised and games that were televised but have ended may be presented in addition to the televised games still in progress. For example, the Pistons at Hornets game shown in Fig. 50 is not televised because there is no channel indicated. If the system were able to access only locally stored program schedule information from DRAM 18, the game would not appear in screen 520. However, because the system is also accessing a received data feed, the game is listed together with an updated score. Similarly, the Knicks at Pacers game shown in screen 520 may or may not have been televised, but because it is concluded, no channel is indicated. By accessing the data feed, the system is able to display the final score. In addition, for televised games, such as the Nets at Hawks and Bulls at Celtics as shown in screen 520, game status information not

available in the program guide data may similarly be obtained from a data feed and displayed. In the screen 520 of Fig. 50, the information is sorted by sport and time, but may readily be sorted by other criteria, such as user selected criteria.

The "Today's Sports TV" feature 512 shown in Fig. 49 provides access to screen 530 in Fig. 51 which lists the televised sports programs for the day in chronological order. The program listed at line 531, "Michael Jordan Retrospective," includes the star icon to indicate that a videocassette of the program may be purchased by the user. The "NBA Playoffs" feature 513 of screen 510 provides convenient access to information for all of the day's NBA playoff games. The particular configuration of the Sports TV Guide screen 510 may be changed according to the editorial discretion of the EPG provider. For example, rather than including the NBA Playoffs feature 513 in the fall, this feature could be replaced with MLB Playoffs to provide access to information on baseball playoff games. SImilarly, the "Big Games" line 502 may be changed on a daily or weekly basis to highlight an upcoming game or sports event of particular significance, such as the Superbowl, Olympics, a big fight, etc.

In the improved sports mode of the EPG of the present invention, the flip feature discussed above is automatically configured to display information for sports programs only when the up/down arrow keys 43A are depressed. Channels not presently broadcasting a sports program are automatically skipped. The same is true when using the browse feature -- channels and time slots not scheduled to broadcast a sports program are automatically skipped as the user scans through the program schedule information for programs other than the one currently being displayed.

The access to information contained in data feeds is a novel feature of the EPG of the present invention that greatly enhances its utility. An additional example of how such data feed information may be used is shown in Fig. 52. Screen 540 of Fig. 52 illustrates an embodiment of the browse mode of the EPG. The browse information 541 at the bottom of the screen includes information identifying the program and channel, as desscribed above. In this case, the program is a baseball game and by accessing information in a received data feed, the microcontroller 16 may be programmed to cause the VDG 23 to also display the current score and inning of the game (or time remaining if a football, basketball, or hockey game). In this manner, users may not only browse through program listings but also the scores of games in progress. The "i" icon may be used to indicate that additional information about the game may be displayed, such as quarter summary, half-time statistics, leading scorers, key injuries, etc.

It may be the case that there are games in progress that are not being carried by the user's cable operator or other program distributer and thus not televised at the user location. In addition, it is also desirable to provide information on televised and non-televised games that are concluded and thus no longer being broadcast. Fig. 550 illustrates one embodiment of a screen that may be used to provide access to scores of these non-televised and concluded games. The "Scores" feature 551 indicates that information on these games is available by depressing the left arrow key. The user then enters the "Browse Scores" mode shown in screen 560 of Fig. 54. In screen 560, the browse information identifies the game, score, and inning, but no channel information is provided as the game is not available for viewing. Fig. 55 illustrates an example of a channel manager virtual channel screen 570 that may be used in one embodiment of the present invention. The channel manager permits users to set favorite channels selected from both broadcast channels and data feeds. Broadcast channels 571 are indicated by the station call letters. The left hand column also indicates the channel number the user enters to tune to the station. Data feeds are accessed through virtual channels 572 and identified by the information accesinble through the virtual channel. For example, as shown in screen 570, channel 82 provides access to information in a data feed concerning the Arizona Cardinals professional football team. In addition, the user's favorite channel tuning sequence may be used to control the sequence in which program schedule and data feed information is displayed in the flip and browse modes. Thus, the user may utilize the flip and browse modes to review the information currently in data feeds (accessed through virtual channels) as well as program schedule information for real channels.

The virtual channels containing the data feeds are accessed in the same manner as broadcast channels. For example, to tune to National Football League information, the user may enter the digits 8-0 on the numeric keypad. Alternatively, the user may use the up/down arrow keys 43A and 43B while displaying the virtual channel screen 570 and depress the OK or ENTER key 44 to tune to the information. Upon accessing channel 82 as shown in Fig. 570, screen 580 of Fig. 56 is displayed. Additional screens of information may be accessed using the down arrow key 43B. In addition to providing access to information in data feeds, additional information may also be provided in the stored program schedule information in an improved sports mode of the present invention. For example, rather than storing program schedule information for only a few days, the database may include the entire season schedule for e.g., the professional sports teams in the user's viewing area. This team schedule information may also be accessed through one or more virtual channels.

Fig. 57 illustrates one example of how the product ordering feature described above may be utilized in conjunction with an on-demand data feed information service. Screen 590 illustrates information accessed through NHL channel 192. The two lines at the bottom indicate that two products are available for purchase. These products may be ordered by depressing the star key and inputting the information as described above.

Although the disclosed combined program guide/information service has been described herein using sports information as an example, it will be apparent to those of ordinary skill in the art that the disclosed system is not limited to sports information and has application for any type of information. The on-demand access to data feeds provided by the EPG of the present invention may be used, e.g., to provide information on late-breaking news stories, up-to-date weather information, stock quotations, etc. Screens such as those illustrated in Figs. 48 and 49 may be provided for any category of information or theme. For example, a business data feed may be provided that permits the user to browse through stock quotes provided in a data feed while watching CNBC. The use of data feeds provides an especially powerful tool in conjunction with the aforedescribed product ordering feature. For example, in addition to receiving stock quotes, it is also possible to provide a system to execute trades using the remote control device or other user control means using the same techniques as for ordering products. Although screen 570 in Fig. 55 illustrates the use of a channel manager virtual channel for only the sports mode, it is apparent that the system may be configured to permit users to customize a favorite channel list or multiple favorite channel lists by combining broadcast channels and virtual channels that cross a range of categories. In addition to establishing a favorite channel list from the channels shown in screen 570, the user may select a favorite channel list comprising, e.g., news broadcast channels and virtual channels comprising news data feeds, weather channels, etc. In short, the access to data feeds provided by the present invention greatly enhances the utility of the EPG and, through the use of virtual channels, in effect converts it into a personalized multimedia information system with a convenient and highly flexible user interface.

The use of data feeds thus provide program distributors such as cable head-ends and DBS providers the flexibility to provide access to a wide variety of information. Information for the data feeds may be obtained from any of a number of sources. For example, near real time information on sports events in progress is provided by services including, but not limited to, SportsTicker, The Sports Network, Stats Inc., and the Associated Press. This information is then used to populate the sports data feed provided to users. Another possible information source is the Internet, which is a source of vast amounts of

information on practically any topic imaginable. The provider of the EPG can receive information from the Internet and edit it to populate the data feeds in addition to information obtained directly from an information provider.

Fig. 58 is a schematic diagram of one embodiment of a receipt and distribution system for the data feeds of the present invention. Data feeds 601 from multiple sources are received by a central data management system 602 which collects, interprets, and formats the received data into data streams or feeds 603. Different data streams may be composed from different types of information. For example, one stream may contain exclusively sports information while another only business information. In this manner, local program distributors 604 may elect to carry only certain of the data streams. Alternatively, a single data stream containing all types of data may be used. The local program distributors provide the data streams, as well as the television programs and EPG to users' set top boxes 605. As shown in Fig. 58, the transmission path between local distributors and users' set top boxes may be coaxial cable 606 or a satellite transmitter and receiver 607. Other transmission paths may also be used, such as optical fiber.

There are numerous ways in which the data feeds may be provided to the users' set-top boxes or other processing equipment. The same principles discussed above in connection with transmission and reception of additional information relating to products available for purchase apply to the present discussion as well. For example, data streams may be transmitted in the VBI of one or several of the television signals transmitted to subscribers. The VBI is especially appropriate where the data feeds consist of textual data that does not require significant bandwidth for transmission. The modified system shown in Fig. 47 including the VBI decoder may then be used in order to receive the data streams. Rather than using the VBI, the full bandwidth of a real television channel may be used for carrying multiple data feeds rather than a single television signal. Alternatively, for digital distribution systems, an in-band or out-of-band digital channel may be used. It is expected that in the future, information in the data feeds will comprise digital audio and video, thereby further enhancing the value of the television as an information tool.

In order to implement the sports browser feature illustrated in e.g., Fig. 52 and the "Today's Games" feature illustrated in Fig. 50, it is necessary to correlate EPG data obtained from DRAM 18 with data from a received data feed. This is because in the browse box 541 of Fig. 52, the information concerning the program itself (the program title, channel, and time) is obtained from the stored program listings while the information concerning the status of the game (score and inning) is obtained from a received data feed.

In one embodiment of the present invention, the EPG data may be correlated with data from the data feed as follows. The data feed containing updated sports scores received at the cable head-end or other program distributor includes a unique identifying code for each sporting event. Updated information (i.e., score and inning or time remaining) in the data feed is preceded by the unique code for that game. In addition, the provider of the information feed assigns the unique codes in advance and provides the code for each upcoming sporting event to the EPG provider. The EPG provider then includes a field in the database of program schedule information for the unique code. Thus, for sporting events, the database of program schedule information stored in DRAM 18 includes the unique identifier for each event. When program schedule information for a live sports event is displayed such as in the browse mode shown in Fig. 52, microcontroller 16 accesses the record for channel 11 for display on the user's television receiver and also reads the unique code associated with the game currently being broadcast on channel 11. The microcontroller 16 then accesses the data in a sports information feed and searches the data for the appropriate identifying code. When the appropriate code is identified, the updated information on the status of the sporting event is extracted from the data feed. The information extracted from the data feed is then provided to VDG 23 for display on the television receiver 27 in the manner described above in connection with the stored program schedule information. In this manner, displays such as that illustrated in 541 of Fig. 52 are possible.

It will be recognized by those of ordinary skill in the art that there are many other ways to correlate the program schedule data stored in the DRAM 18 with information on an incoming data stream. In an alternate embodiment, rather than identifying each individual sporting event with a code, team identifiers could be used to identify each game in which a particular team is a participant. Program schedule information would then be correlated with information in the data feed in the same manner described above, but on the basis of the team identifier rather than a program identifier. Team identification codes are particularly useful for information in data feeds that does not relate to a particular game. For example, in the screen shown in Fig. 570, where a virtual channel is used for information on individual teams, team identifiers in the received data feed may be used so that the microcontroller can extract the information concerning, e.g., the Arizona Cardinals, when channel 82 is accessed by the user.

In the browse scores mode shown in Fig. 54 where scores are displayed for games not being televised, it is not necessary to perform the correlation step described above. Microcontroller 16 may then be programmed to sequentially access each piece of information

(i.e., updated scores) in the data feed for display by the VDG 23 under user-control with the up/down arrow keys 43A. Alternatively, in the browse scores mode, the microcontroller may be programmed to access only those updated scores for games not televised or televised games that are concluded and thus not displayed in browse mode of Fig. 52. Thus, when the user depresses the up/down arrow keys 43A, scores for televised games in progress are skipped by the microcontroller 16. In this manner, the scores browse mode may conveniently be accessed at the beginning or end of the sports browse mode of Fig. 52 -- after all the channels currently airing sporting events are cycled through using, e.g., the up arrow key, the user may then browse scores of non-televised and concluded games by continuing to depress the up arrow key and then wrap around to the beginning of the sports browse mode of Fig. 52.

The form and content of a particular computer program to implement the invention disclosed herein will be readily apparent to those skilled in the art of video system programming and graphic display. A flow chart showing the operation logic of the system is shown in Figs. 36a-d. It will also be appreciated by those skilled in the art that there can be departure from the specific embodiment of the invention described herein without departing from the true scope of the claims appended hereto.

We claim:

1. An electronic television program schedule system comprising:

storage means for storing program schedule information for a plurality of television programs, said program schedule information comprising, for at least one of said programs, information identifying said program as a live event;

data processing means for generating video display control commands;

means for receiving a data feed during the pendency of said live event, said data feed comprising information regarding the status of said live event;

means for correlating said program schedule information for said live event with said status information for said live event;

a video display generator for receiving said video display control commands from said data processing means, said program schedule information from said storage means, and said status information from said data feed, wherein said video display generator generating a display signal concurrently comprising said program schedule information for said live event and said status information for said live event.

2. The system of claim 1 further comprising a television receiver for receiving said display signal and concurrently displaying said program schedule information for said live event and said status information for said live event.

3. A process for displaying program schedule information and status information for a live and in progress televised event comprising:

receiving, prior to said event, information identifying the title, time, and television channel of said event,

storing said time, title, and channel information for said event in an electronic storage device,

receiving, during said televised event, status information for said event,

retrieving said time, title, and channel information from said storage device during said live event,

correlating said retrieved time, title, and channel information with said received status information for said live event, and

causing a display device to simultaneously display said time, title, and channel information and said status information for said live event during the pendency of said event.

4. The process of claim 3 further comprising receiving the television signal for said live event and causing said television signal to be displayed simultaneously with said time, title and channel information and said status information.

5. An electronic television program schedule system comprising:

storage means for storing program schedule information for a plurality of television programs;

user control means for generating user control commands, said user control commands including channel tuning commands;

data processing means for generating video display control commands in response to said user control commands;

means for receiving a data feed, said data feed comprising information in one or more predetermined categories;

a user interface for said television program schedule system, said interface comprising one or more virtual channels for access to the information in said data feeds wherein each said category of information is accessed through a different virtual channel, said interface further comprising means for establishing a favorite channel tuning sequence controlled by said channel tuning commands, said sequence optionally comprising both real and virtual channels;

a video display generator for receiving said video display control commands from said data processing means, said program schedule information from said storage means, said information from said data feed, and a television program signal from a television receiver, and for generating a display signal comprising any one of said received programs schedule information, said received data feed information, and said received television program signal.

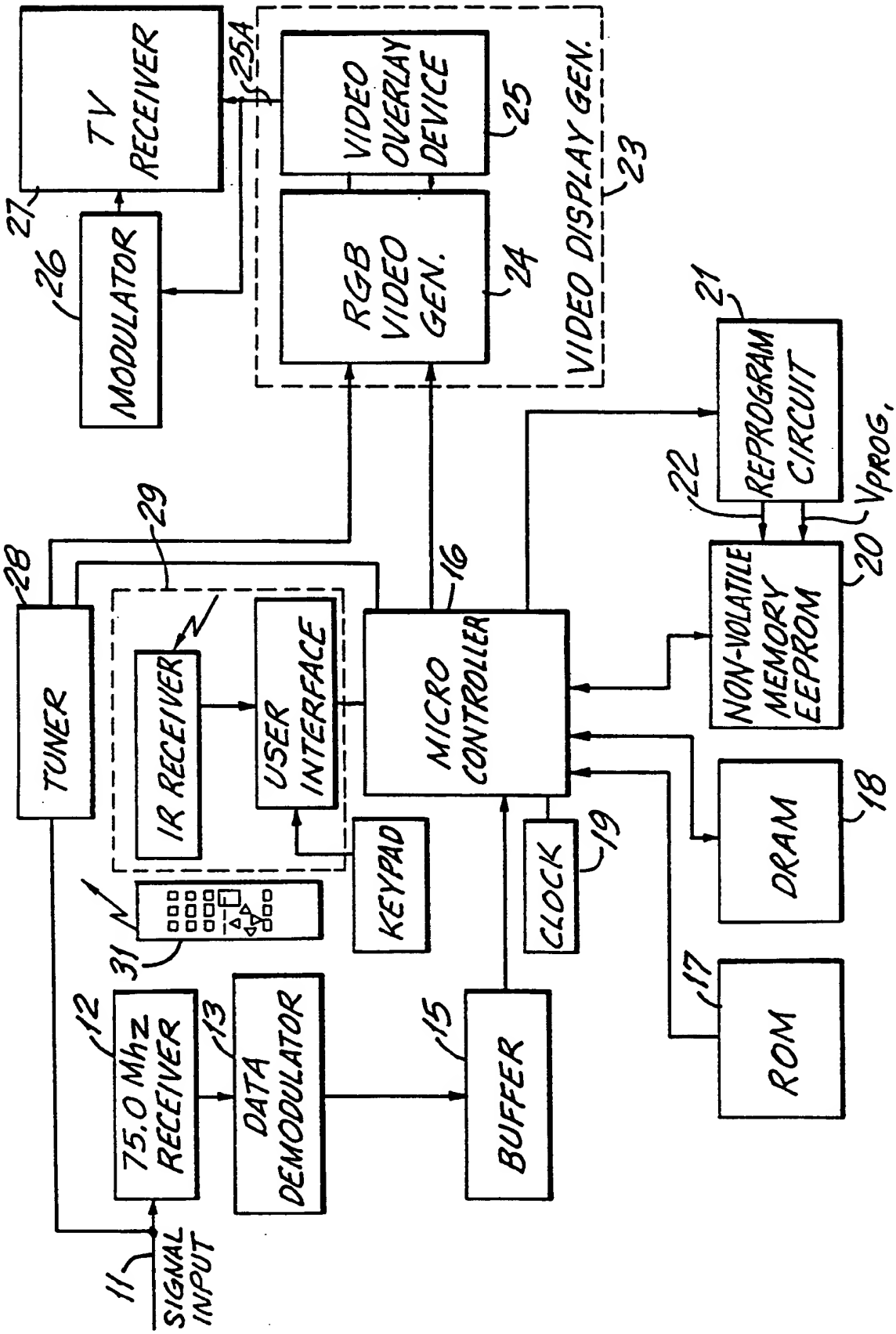
TV RECEIVER
25A
VIDEO OVERLAY DEVICE
25
VIDEO DISPLAY GEN.
23
27
26
MODULATOR
RGB VIDEO GEN.
24
21
REPROGRAM CIRCUIT
22
VPROG,
20
NON-VOLATILE MEMORY EEPROM
28
29
16
TUNER
IR RECEIVER
USER INTERFACE
MICRO CONTROLLER
KEYPAD
CLOCK
19
DRAM
18
31
12
75.0 Mhz RECEIVER
13
DATA DEMODULATOR
15
BUFFER
17
ROM
11
SIGNAL INPUT

FIG. 1

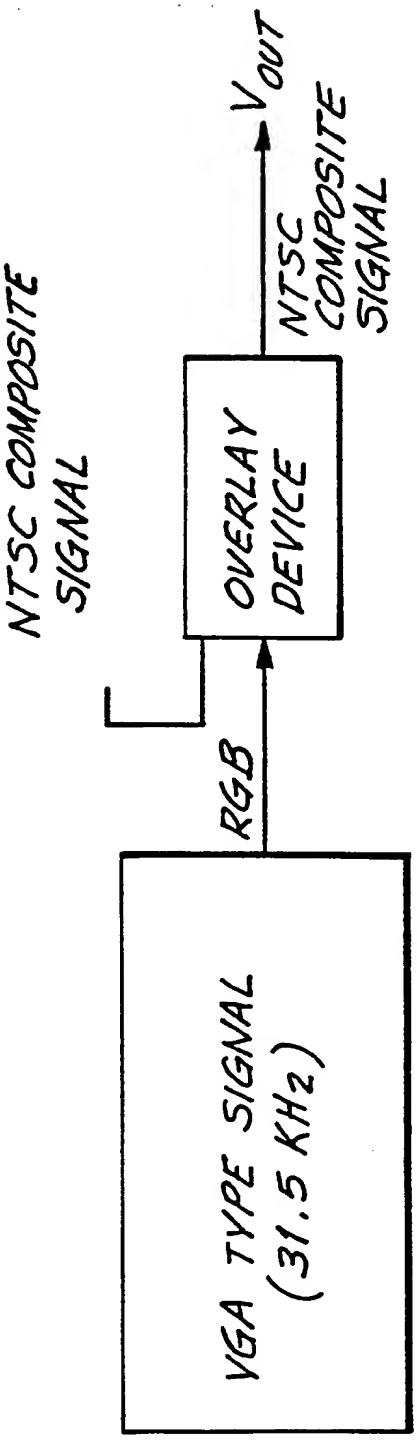
VGA TYPE SIGNAL
(31.5 KHz)
RGB
OVERLAY DEVICE
NTSC COMPOSITE SIGNAL
NTSC COMPOSITE SIGNAL
$V_{OUT}$

FIG. 2

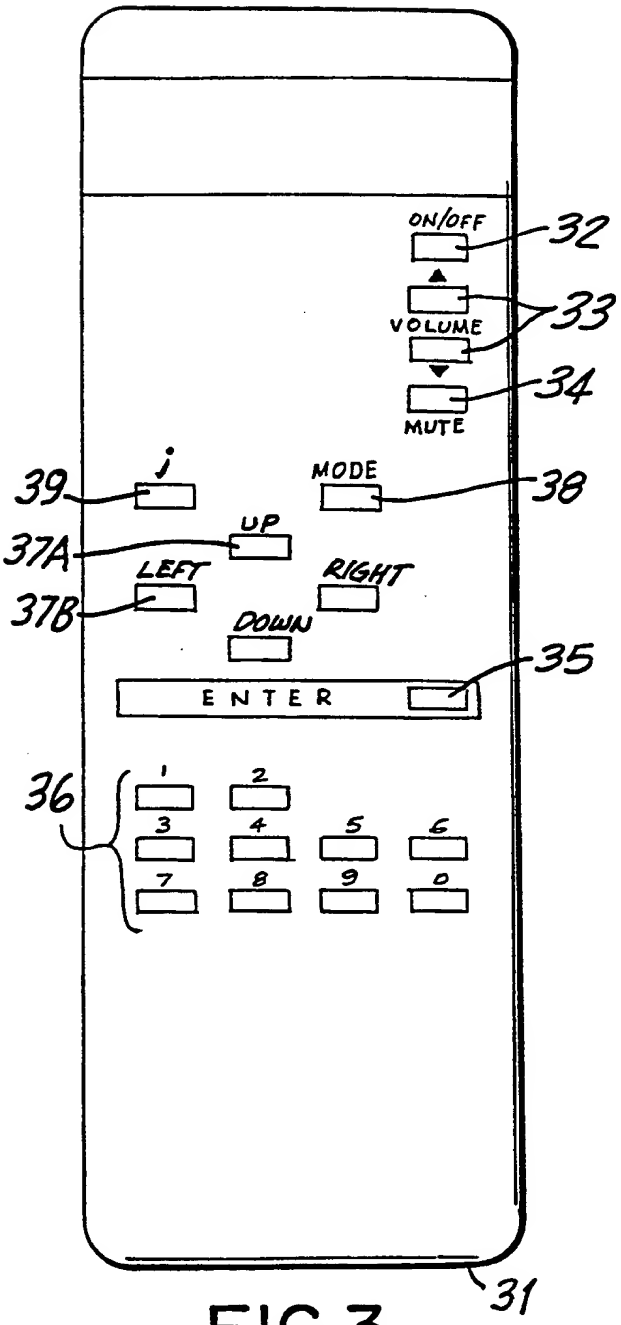
ON/OFF
32
VOLUME
33
MUTE
34
i
39
MODE
38
UP
37A
LEFT
RIGHT
37B
DOWN
ENTER
35
36
1
2
3
4
5
6
7
8
9
0
31

FIG.3

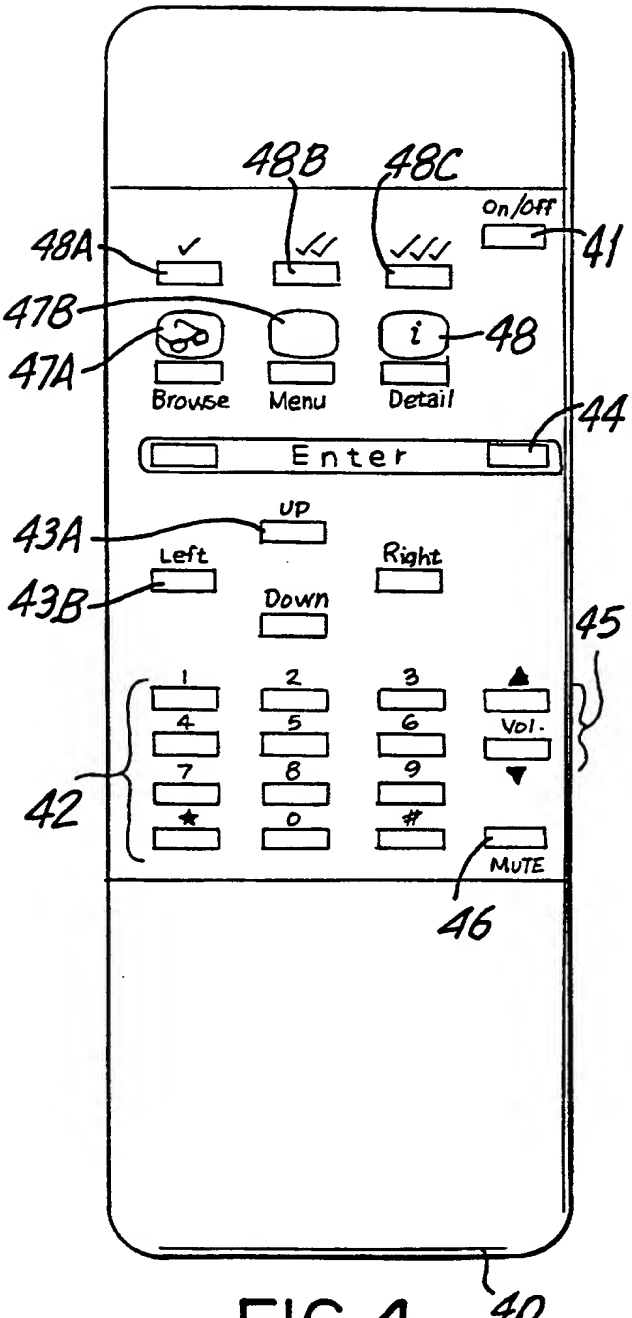
48B
48C
On/off
41
48A
47B
47A
48
Browse
Menu
Detail
44
Enter
43A
UP
Left
Right
43B
Down
45
1
2
3
4
5
6
Vol.
7
8
9
42
*
0
#
MUTE
46
40

FIG.4

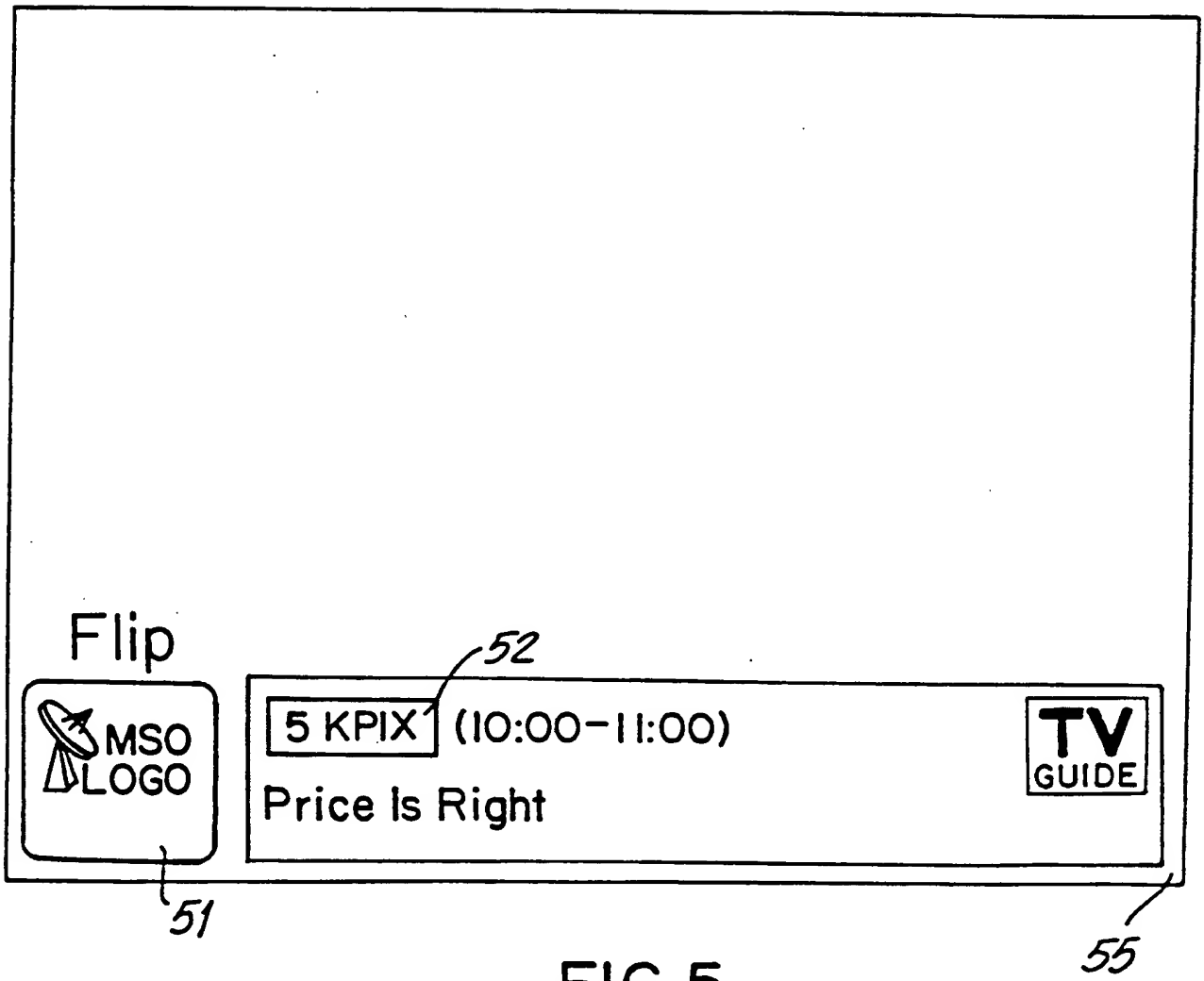


FIG.5

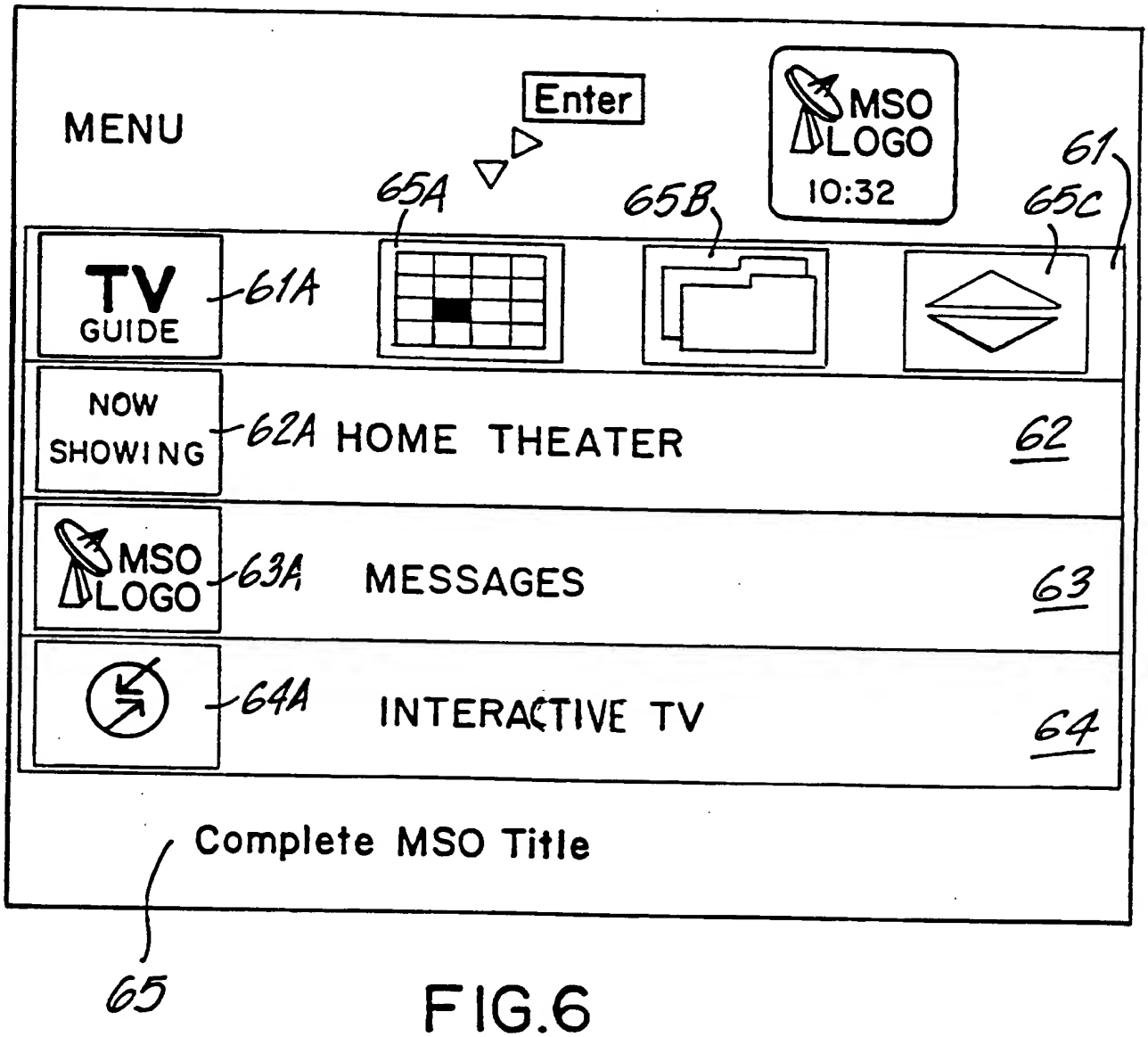
MENU
Enter
MSO LOGO
10:32
61
65A
65B
65C
TV GUIDE
61A
NOW SHOWING
62A
HOME THEATER
62
MSO LOGO
63A
MESSAGES
63
64A
INTERACTIVE TV
64
Complete MSO Title
65

FIG.6

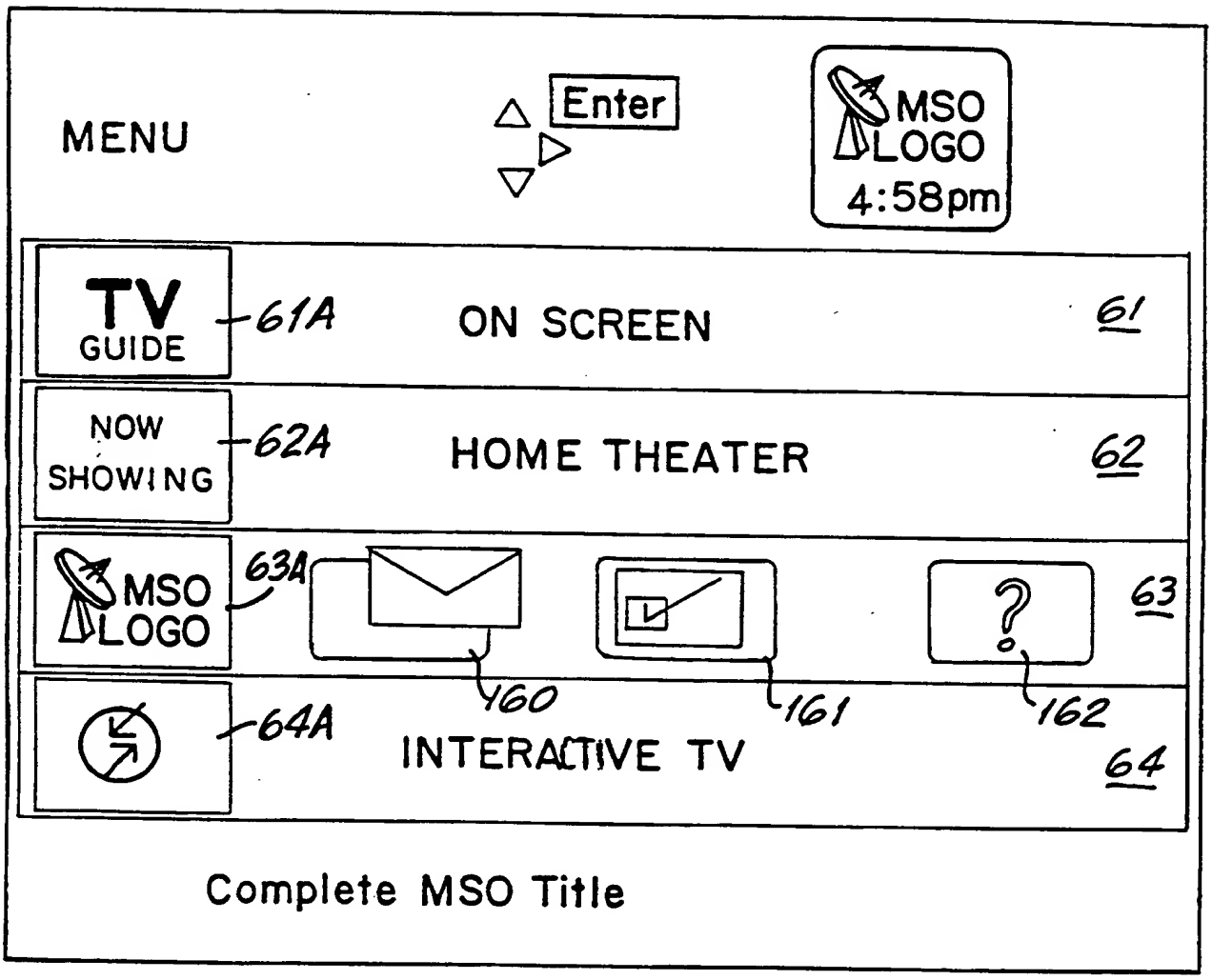
MENU
Enter
MSO LOGO
4:58pm
TV GUIDE
61A
ON SCREEN
61
NOW SHOWING
62A
HOME THEATER
62
MSO LOGO
63A
63
160
161
162
64A
INTERACTIVE TV
64
Complete MSO Title

FIG.6A

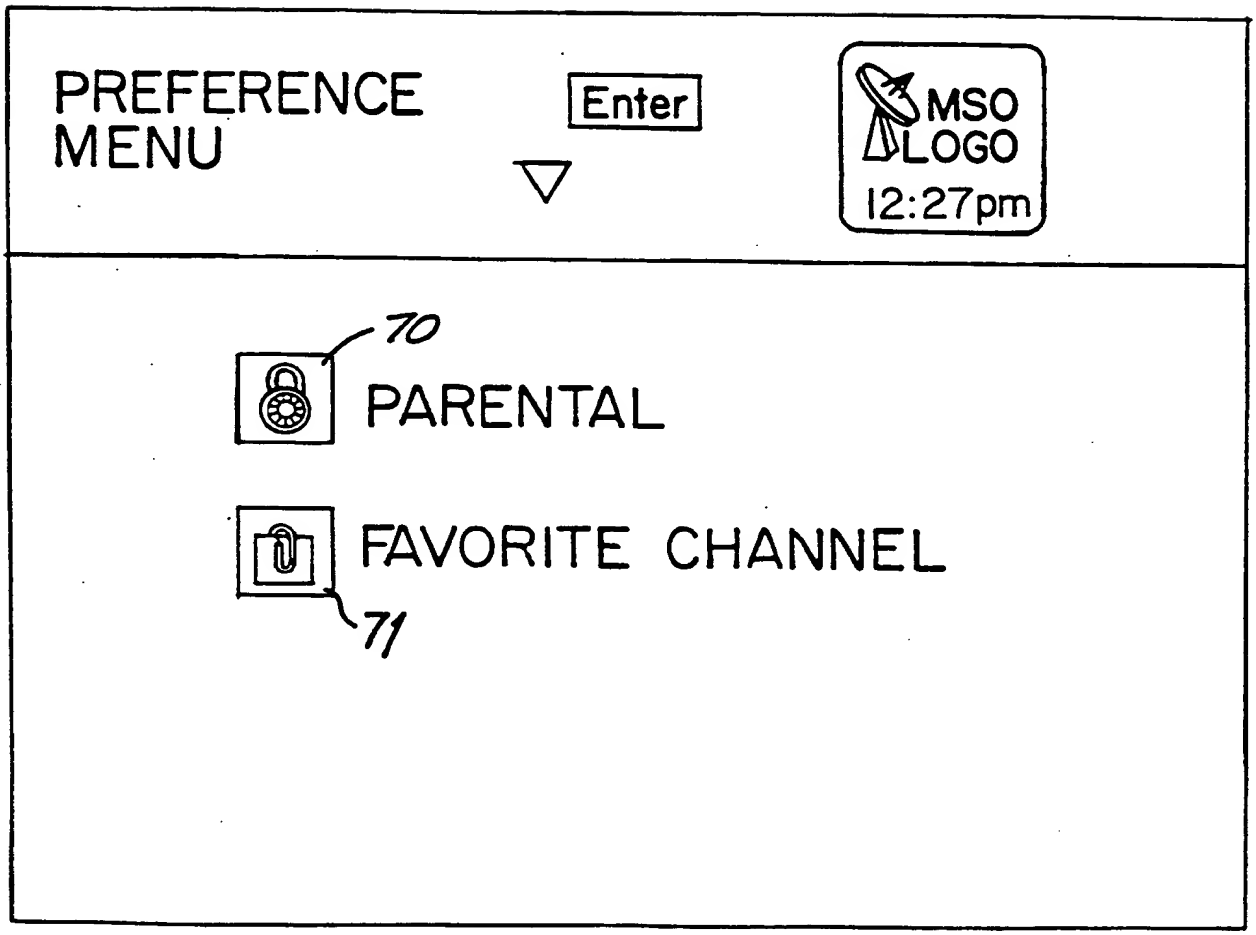
PREFERENCE MENU
Enter
MSO LOGO
12:27pm
70
PARENTAL
FAVORITE CHANNEL
71

FIG.7

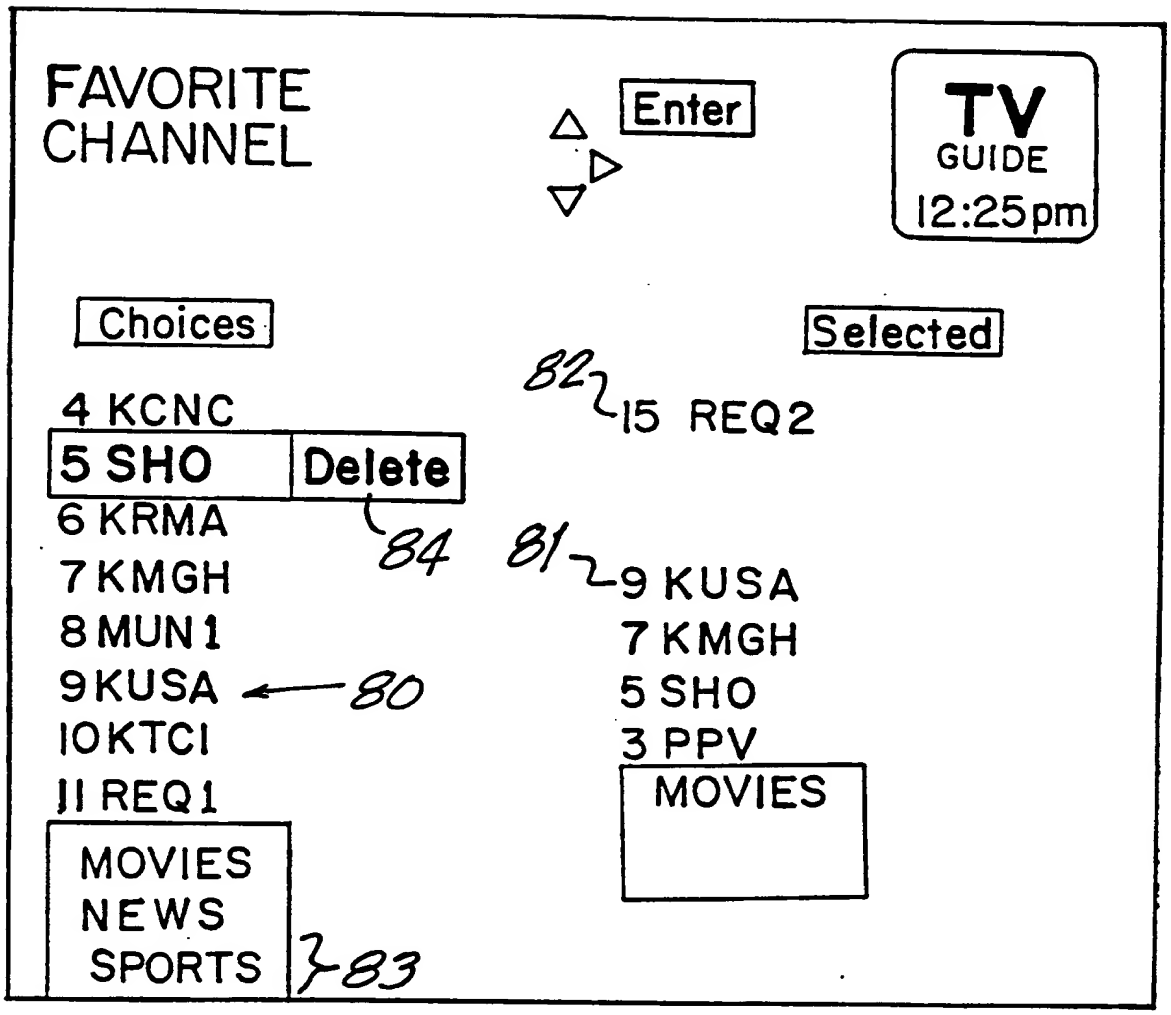
FAVORITE CHANNEL
Enter
TV GUIDE 12:25pm
Choices
Selected
82
15 REQ2
4 KCNC
5 SHO
Delete
84
6 KRMA
7 KMGH
8 MUN1
9 KUSA
80
10 KTCI
11 REQ1
MOVIES
NEWS
SPORTS
83
81
9 KUSA
7 KMGH
5 SHO
3 PPV
MOVIES

FIG.8

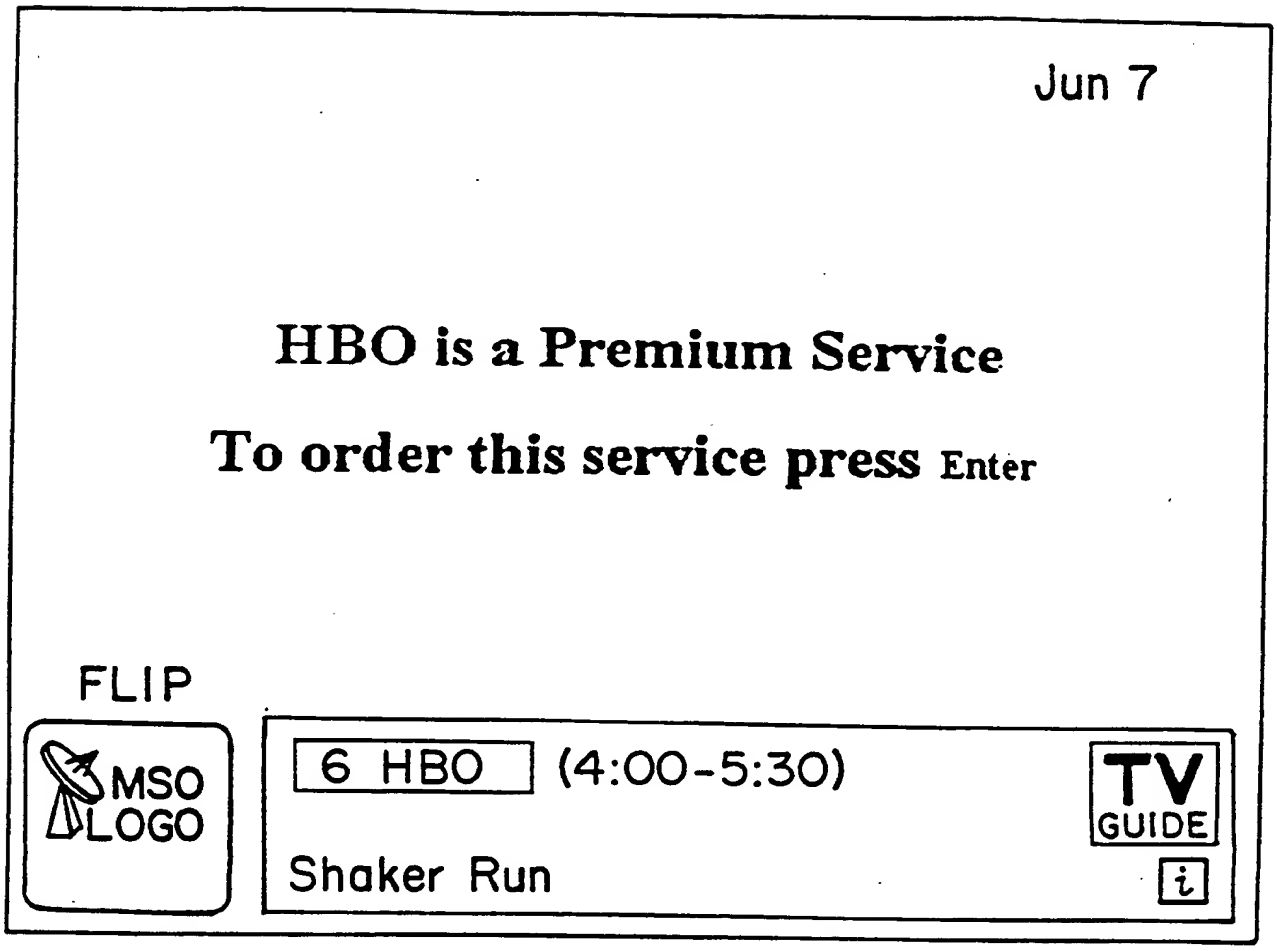
Jun 7
HBO is a Premium Service
To order this service press Enter
FLIP
MSO LOGO
6 HBO
(4:00-5:30)
Shaker Run
TV GUIDE
i

FIG.9

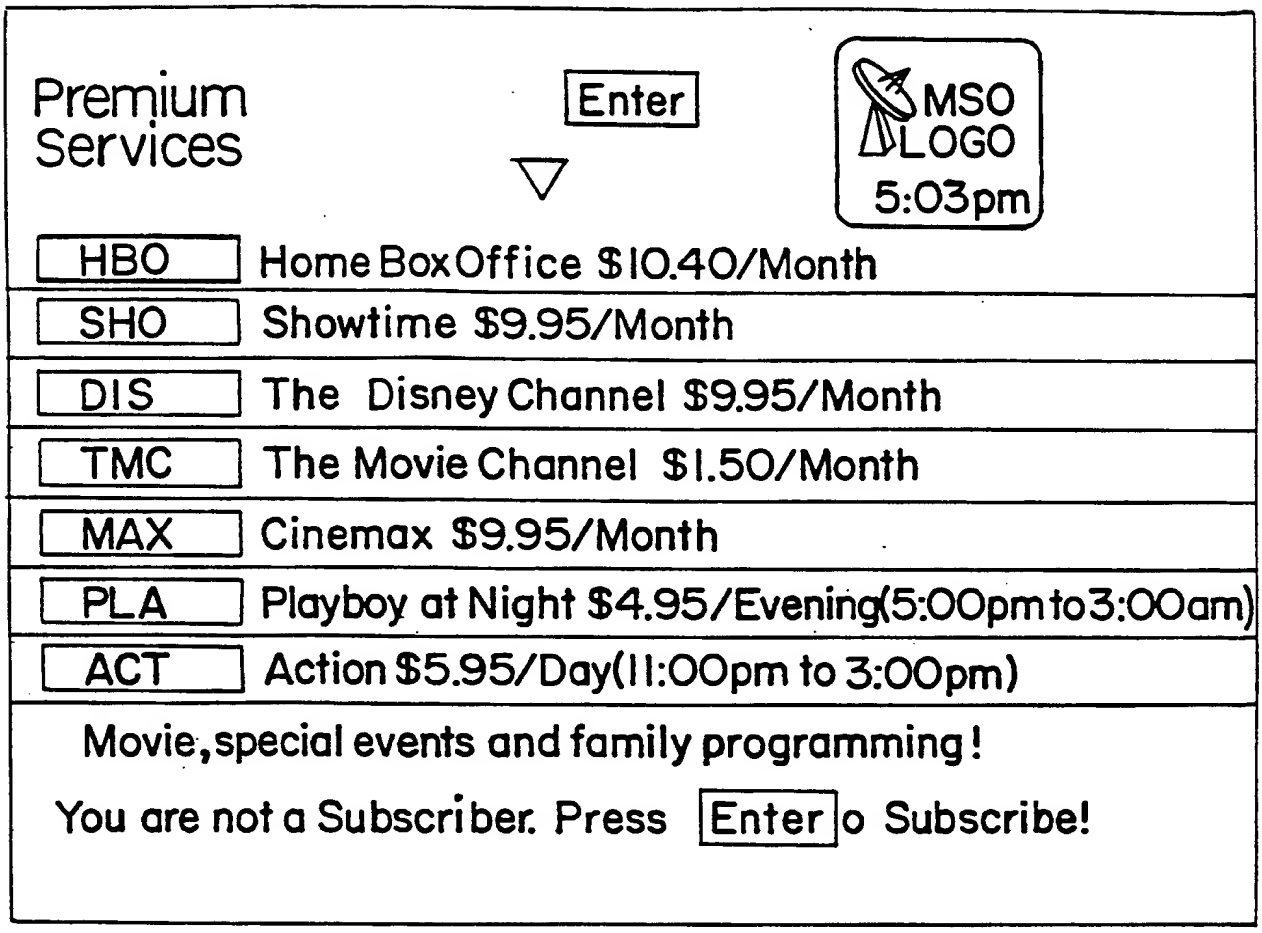
Premium Services
Enter
MSO LOGO
5:03pm
HBO Home Box Office $10.40/Month
SHO Showtime $9.95/Month
DIS The Disney Channel $9.95/Month
TMC The Movie Channel $1.50/Month
MAX Cinemax $9.95/Month
PLA Playboy at Night $4.95/Evening(5:00pm to 3:00am)
ACT Action $5.95/Day(11:00pm to 3:00pm)
Movie, special events and family programming!
You are not a Subscriber. Press Enter o Subscribe!

FIG. 10

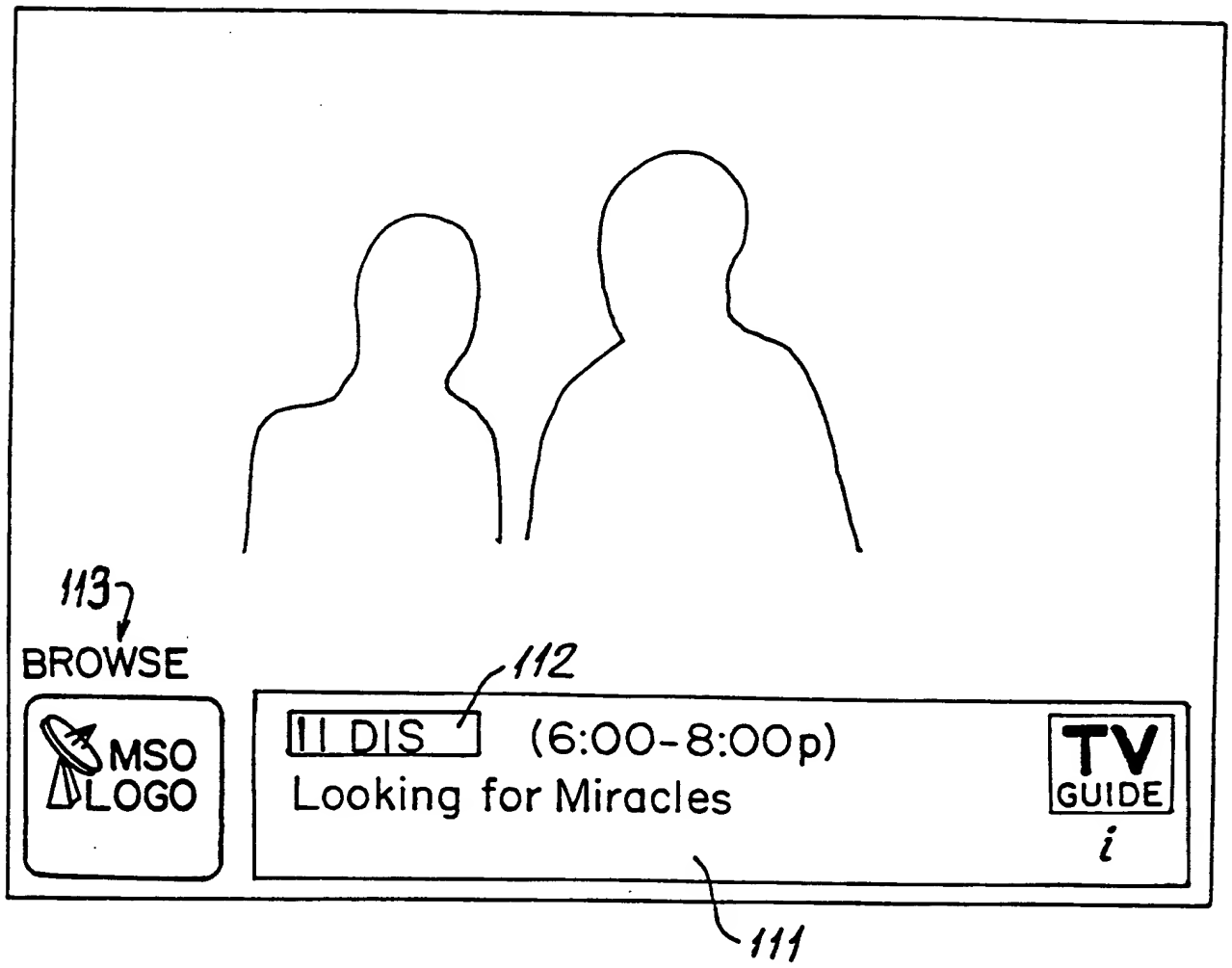
113
BROWSE
MSO LOGO
112
11 DIS
(6:00-8:00p)
Looking for Miracles
TV GUIDE
i
111

FIG. 11

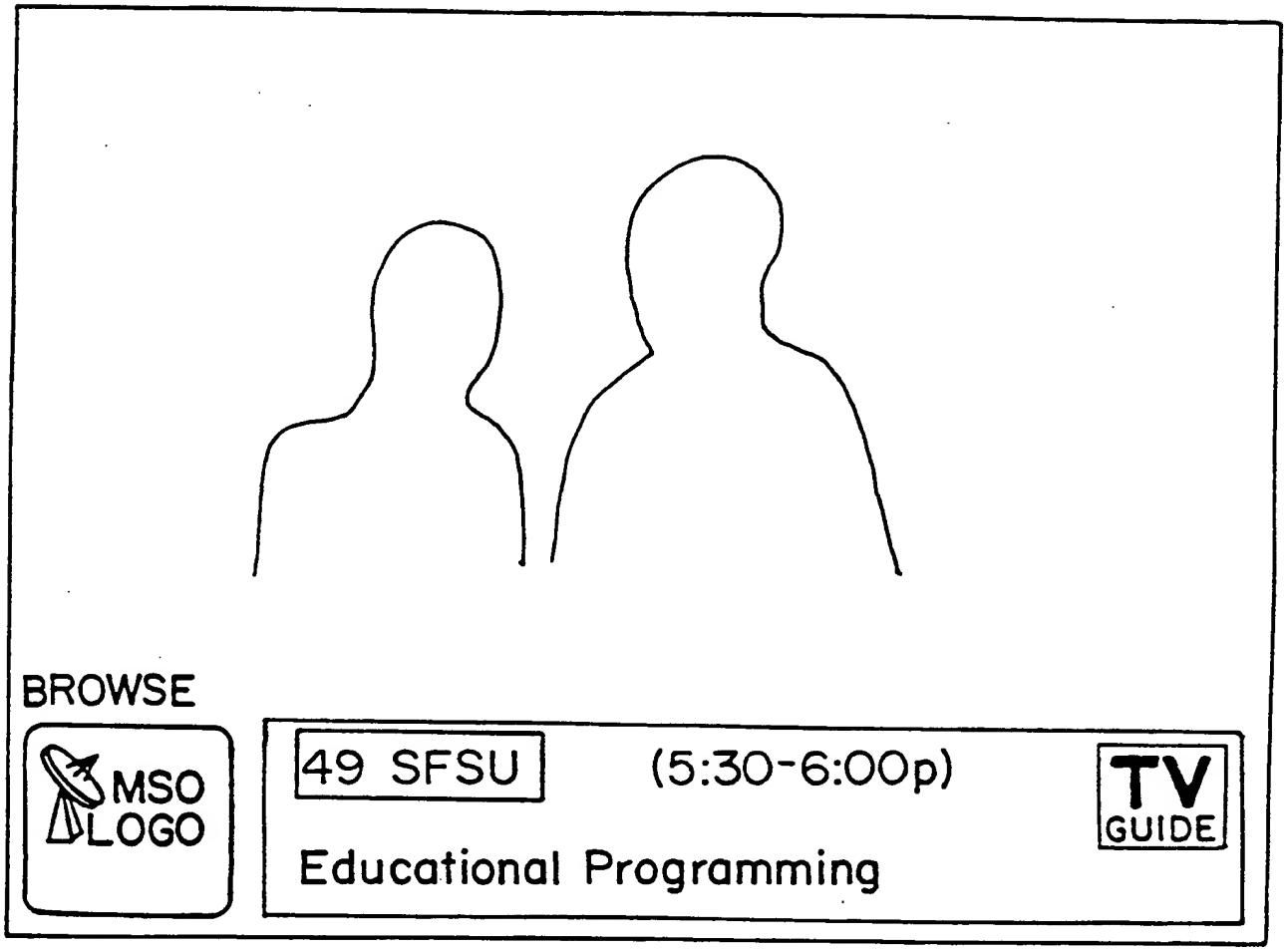
BROWSE
MSO LOGO
49 SFSU
(5:30-6:00p)
TV GUIDE
Educational Programming

FIG. 12

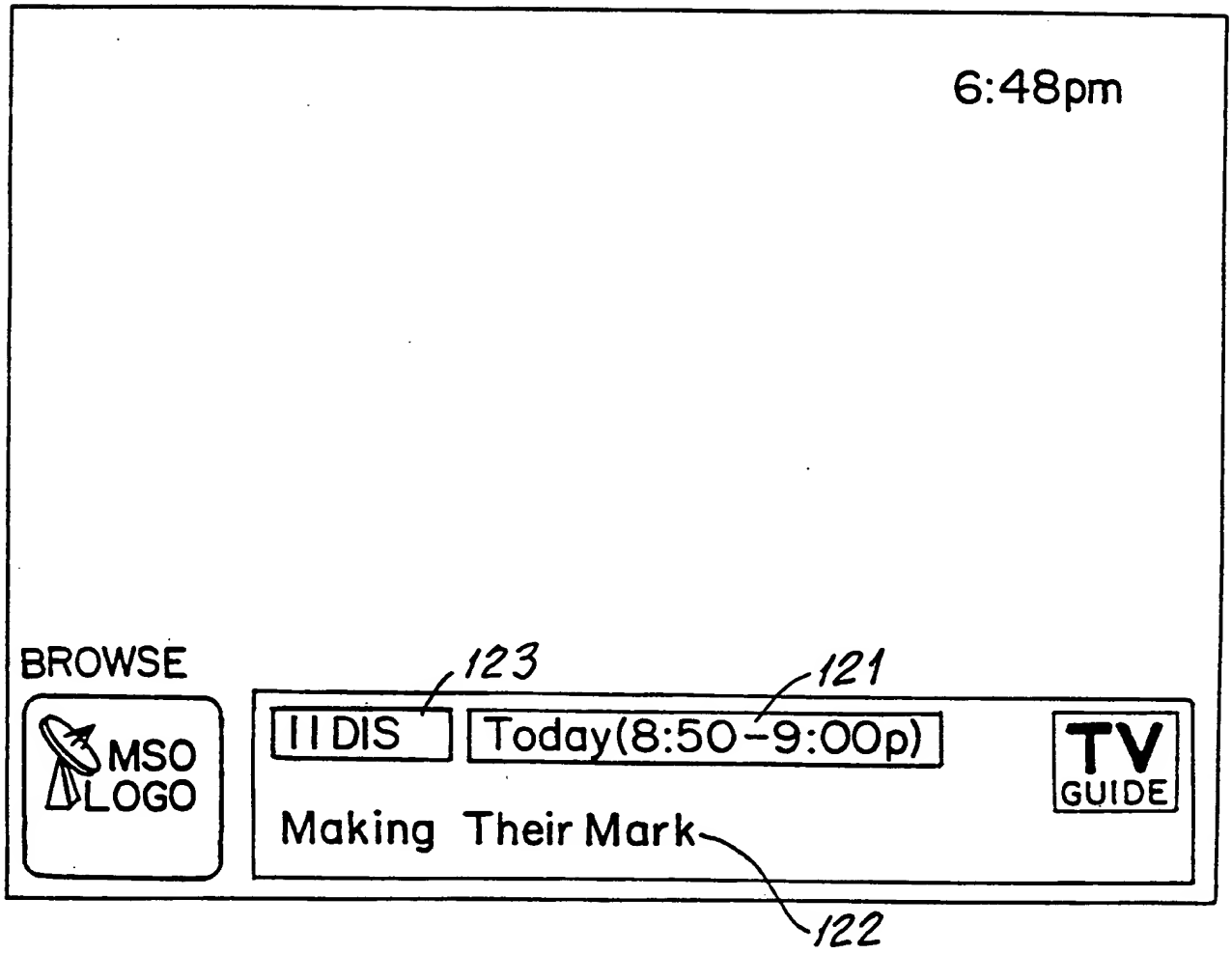
6:48pm
BROWSE
MSO LOGO
123
121
11 DIS
Today(8:50-9:00p)
TV GUIDE
Making Their Mark
122

FIG. 12A

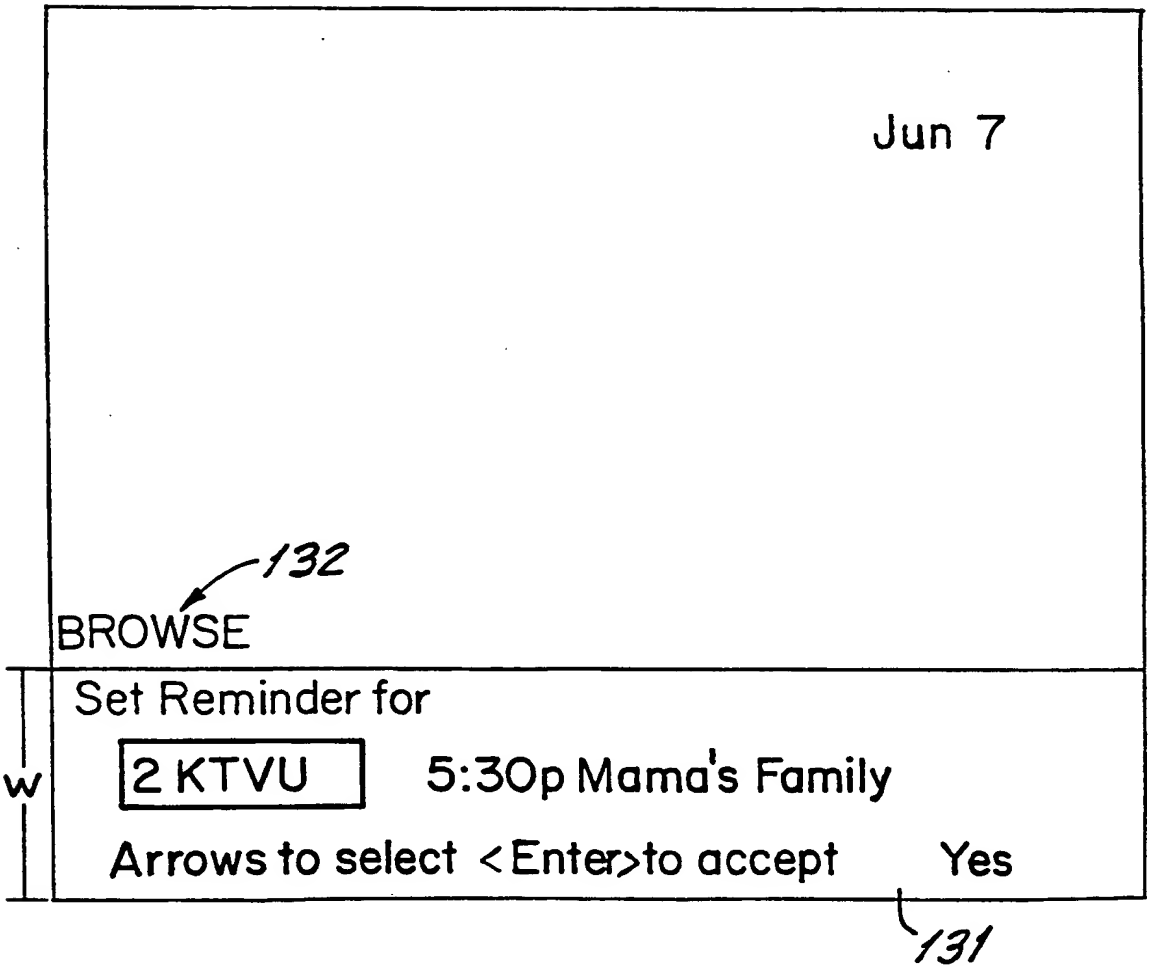
Jun 7
132
BROWSE
Set Reminder for
2 KTVU
5:30p Mama's Family
Arrows to select <Enter>to accept
Yes
W
131

FIG.13

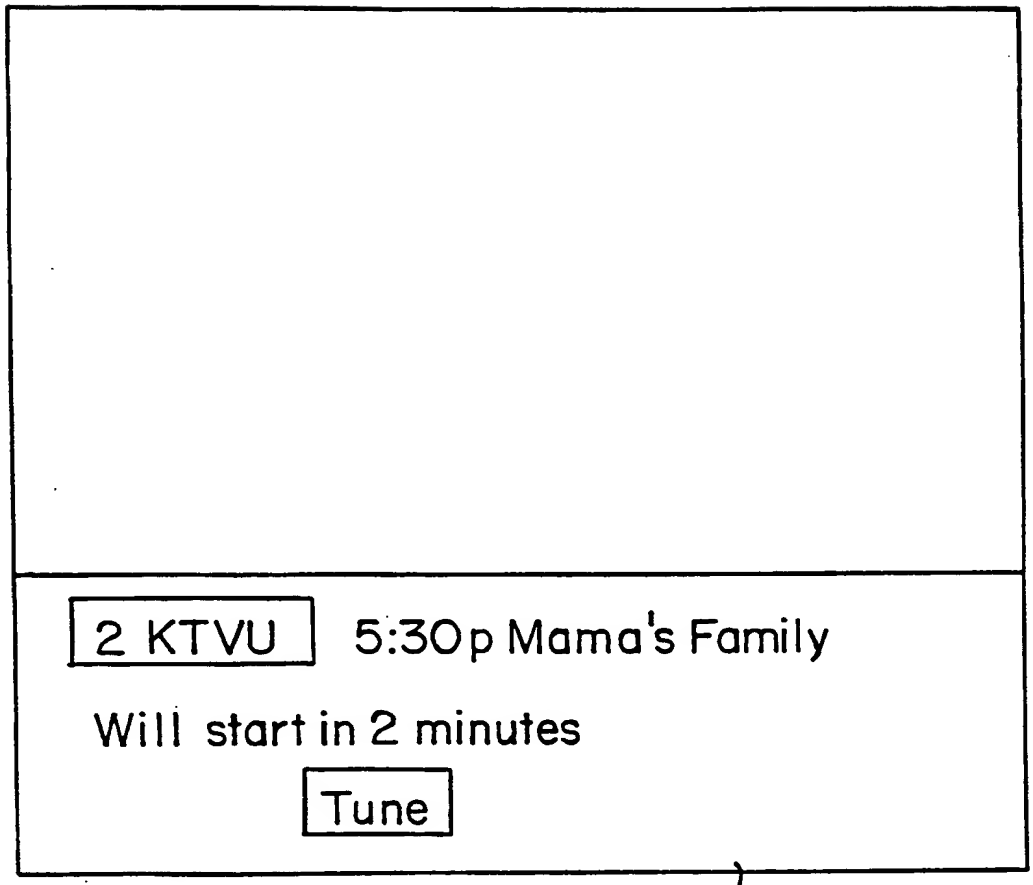


FIG.14

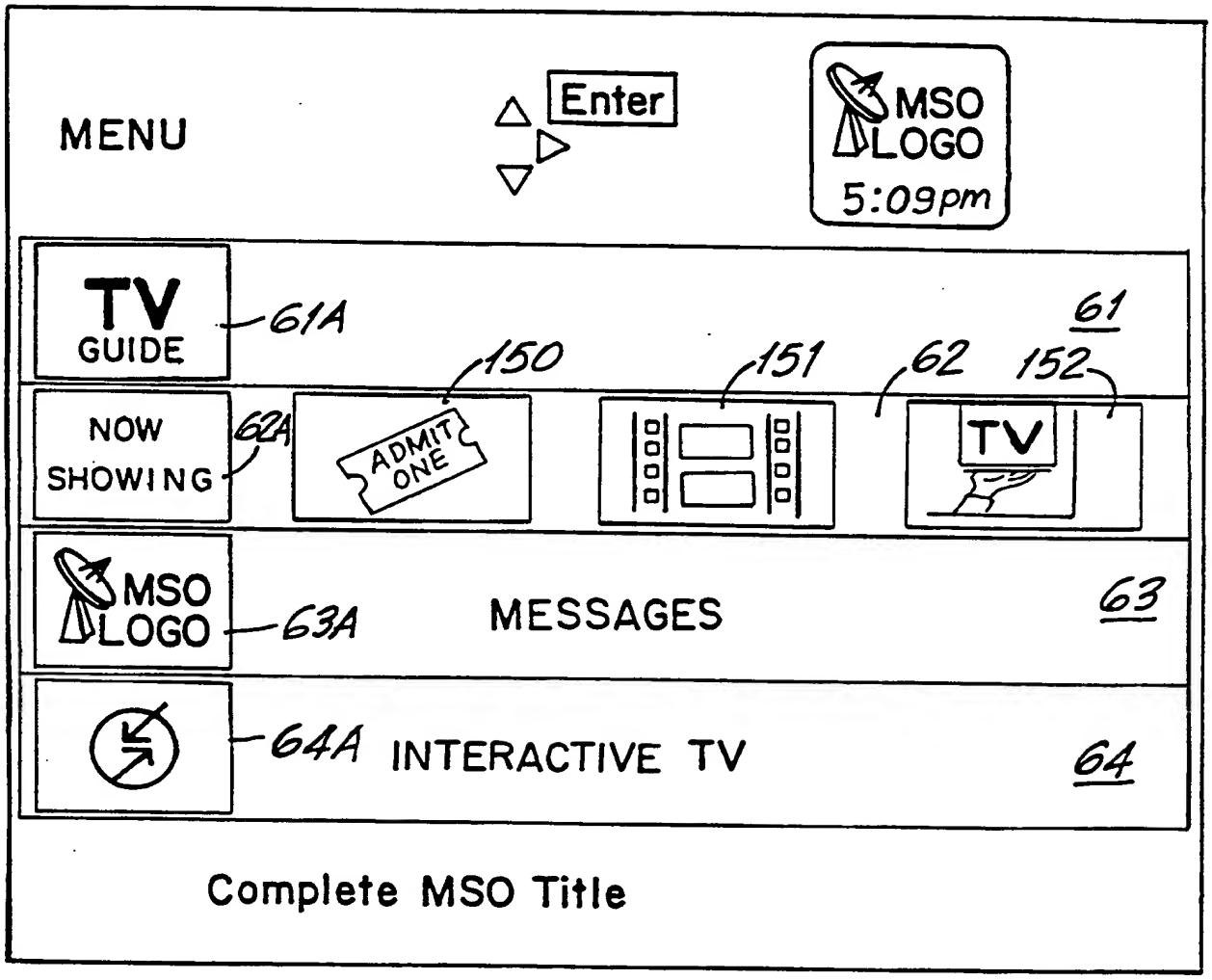
MENU
Enter
MSO LOGO
5:09pm
TV GUIDE
61A
61
150
151
62
152
NOW SHOWING
62A
ADMIT ONE
TV
MSO LOGO
63A
MESSAGES
63
64A
INTERACTIVE TV
64
Complete MSO Title

FIG.15

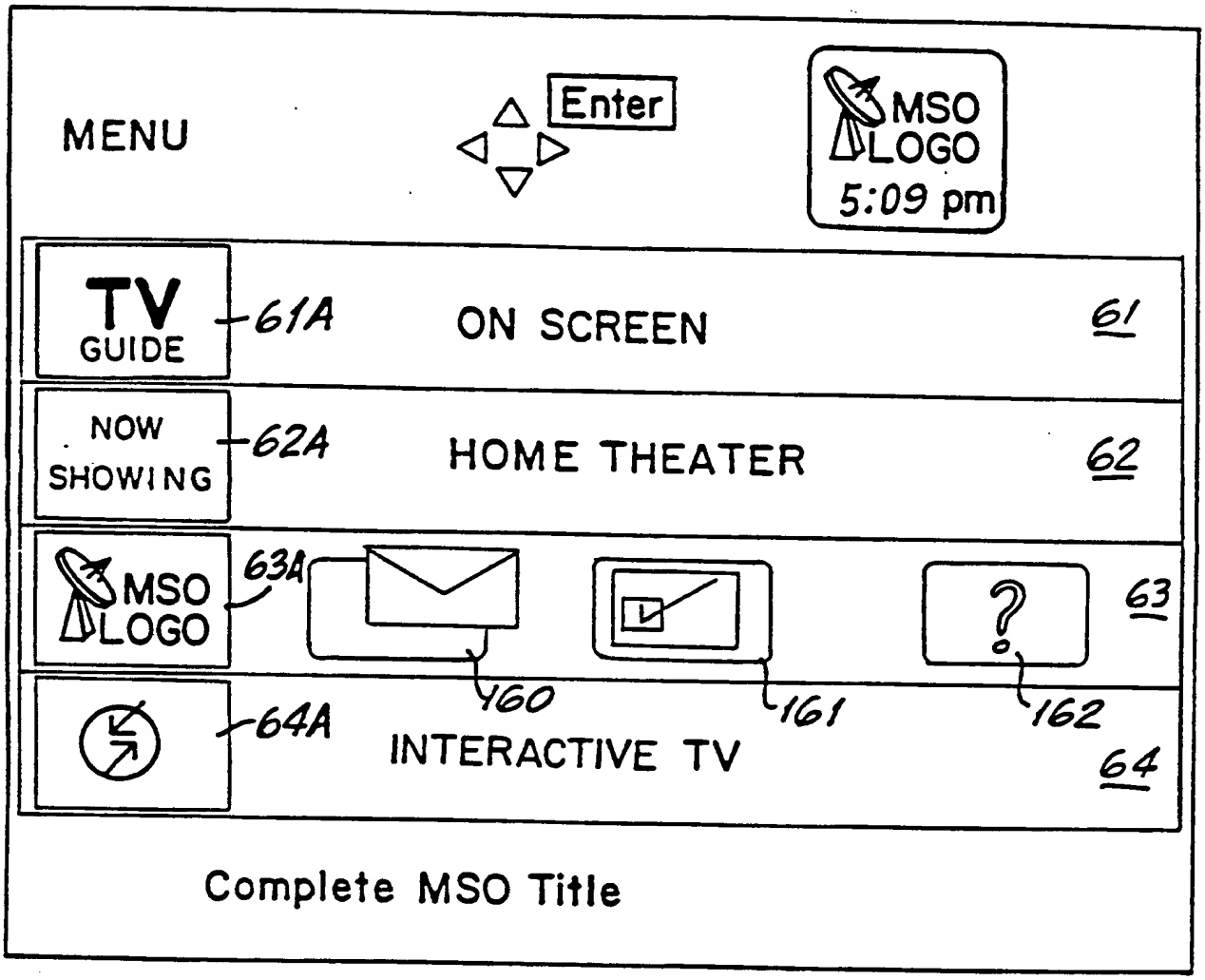
MENU
Enter
MSO LOGO
5:09 pm
TV GUIDE
61A
ON SCREEN
61
NOW SHOWING
62A
HOME THEATER
62
MSO LOGO
63A
63
160
161
162
64A
INTERACTIVE TV
64
Complete MSO Title

FIG.16

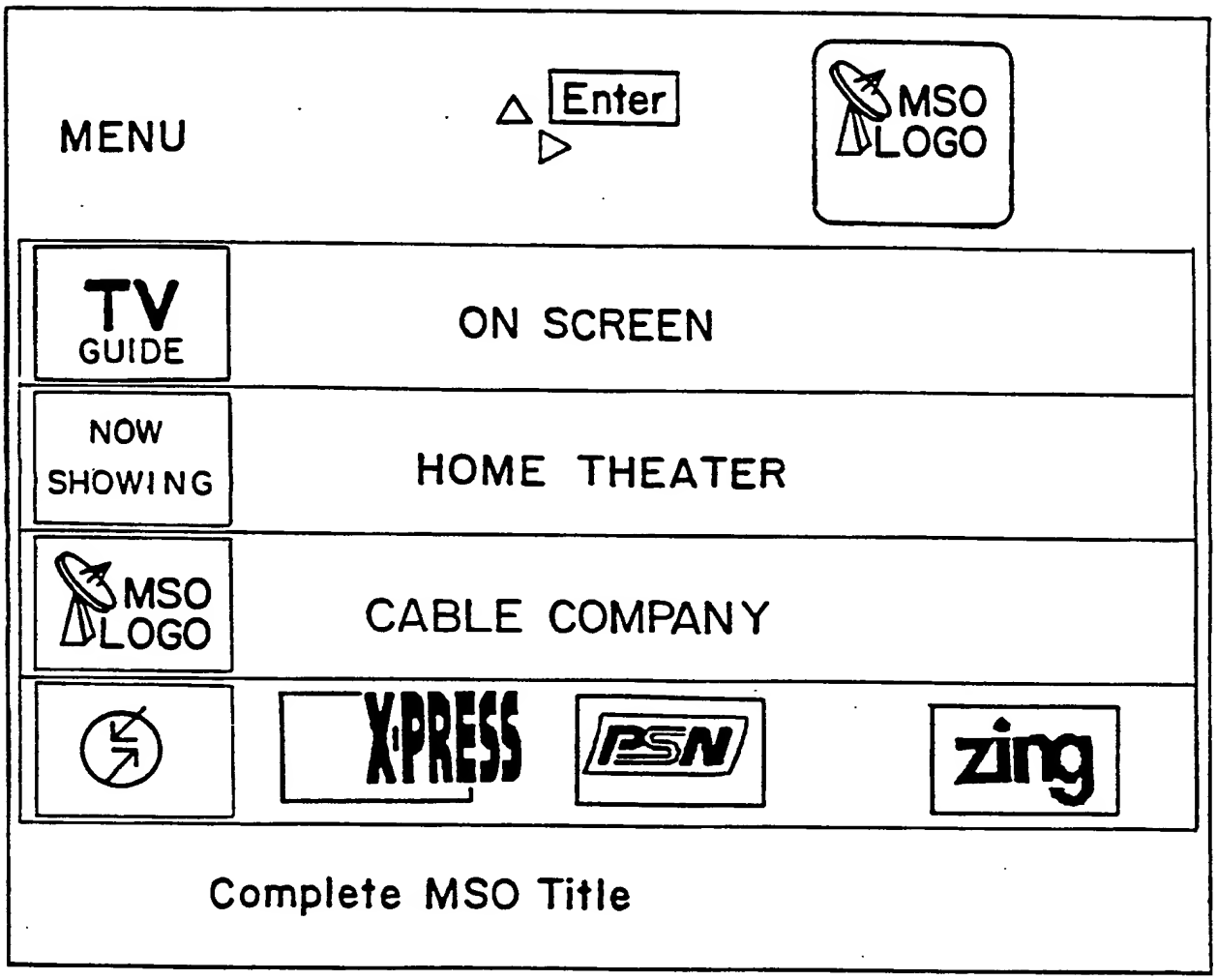
MENU
Enter
MSO LOGO
TV GUIDE
ON SCREEN
NOW SHOWING
HOME THEATER
MSO LOGO
CABLE COMPANY
X-PRESS
PSN
zing
Complete MSO Title

FIG.17

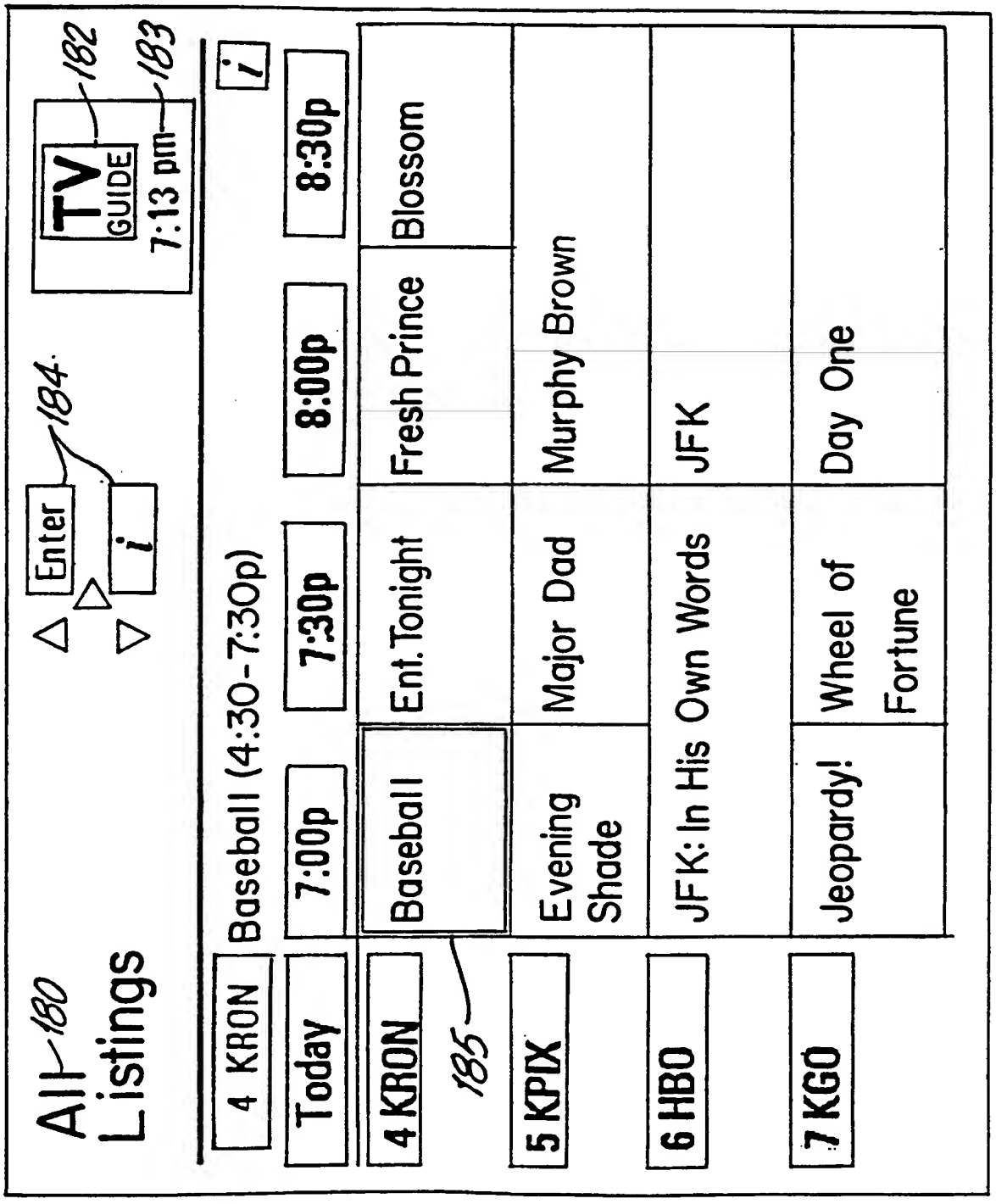
All Listings
180
Enter
184
i
TV GUIDE
182
7:13 pm
183
i
4 KRON
Today
Baseball (4:30-7:30p)
7:00p
7:30p
8:00p
8:30p
4 KRON
Baseball
Ent. Tonight
Fresh Prince
Blossom
185
5 KPIX
Evening Shade
Major Dad
Murphy Brown
6 HBO
JFK: In His Own Words
JFK
7 KGO
Jeopardy!
Wheel of Fortune
Day One

FIG. 18

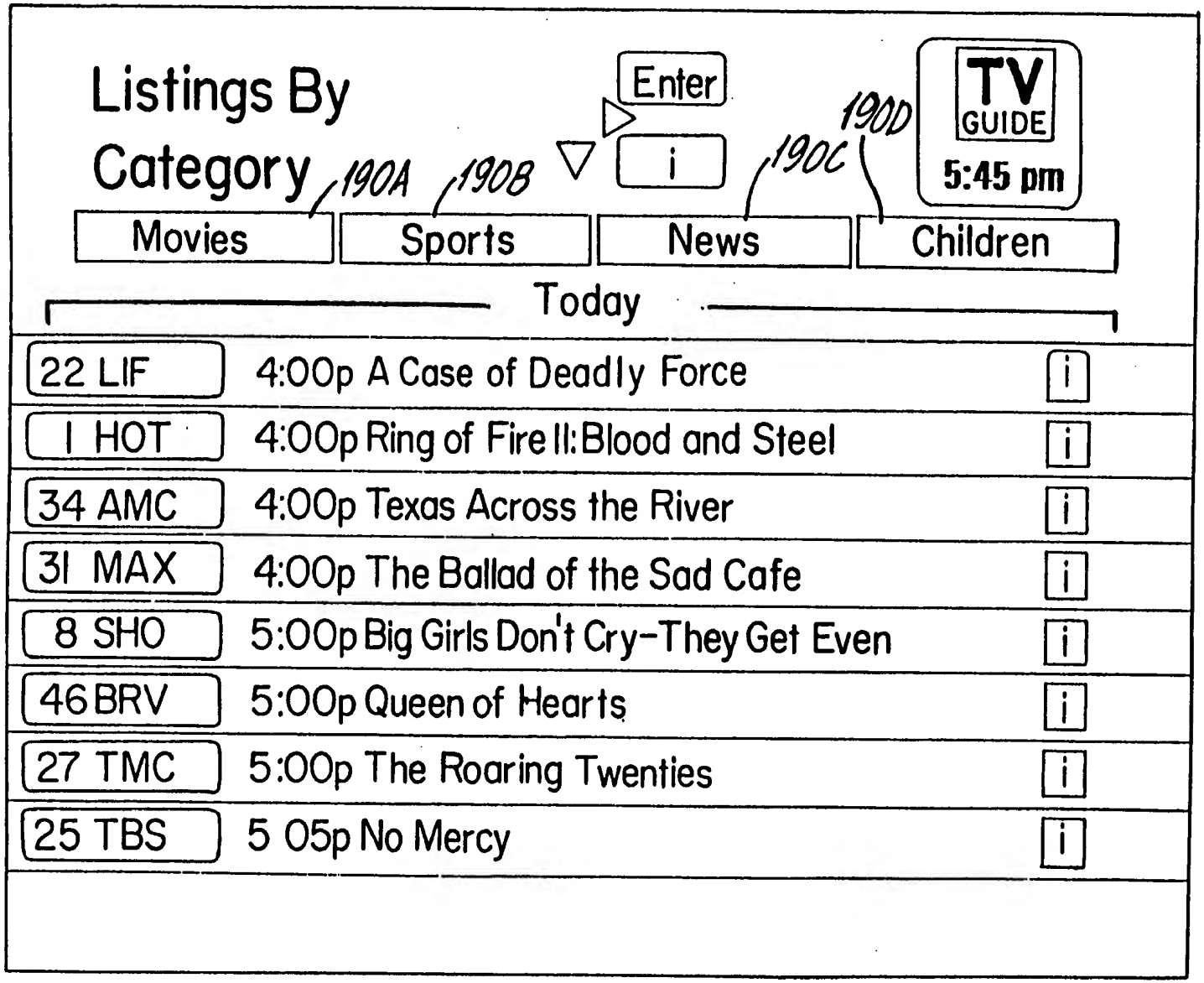
Listings By Category
190A
190B
Enter
i
190C
190D
TV GUIDE
5:45 pm
Movies
Sports
News
Children
Today
22 LIF
4:00p A Case of Deadly Force
1 HOT
4:00p Ring of Fire II: Blood and Steel
34 AMC
4:00p Texas Across the River
31 MAX
4:00p The Ballad of the Sad Cafe
8 SHO
5:00p Big Girls Don't Cry-They Get Even
46 BRV
5:00p Queen of Hearts
27 TMC
5:00p The Roaring Twenties
25 TBS
5 05p No Mercy

FIG. 19

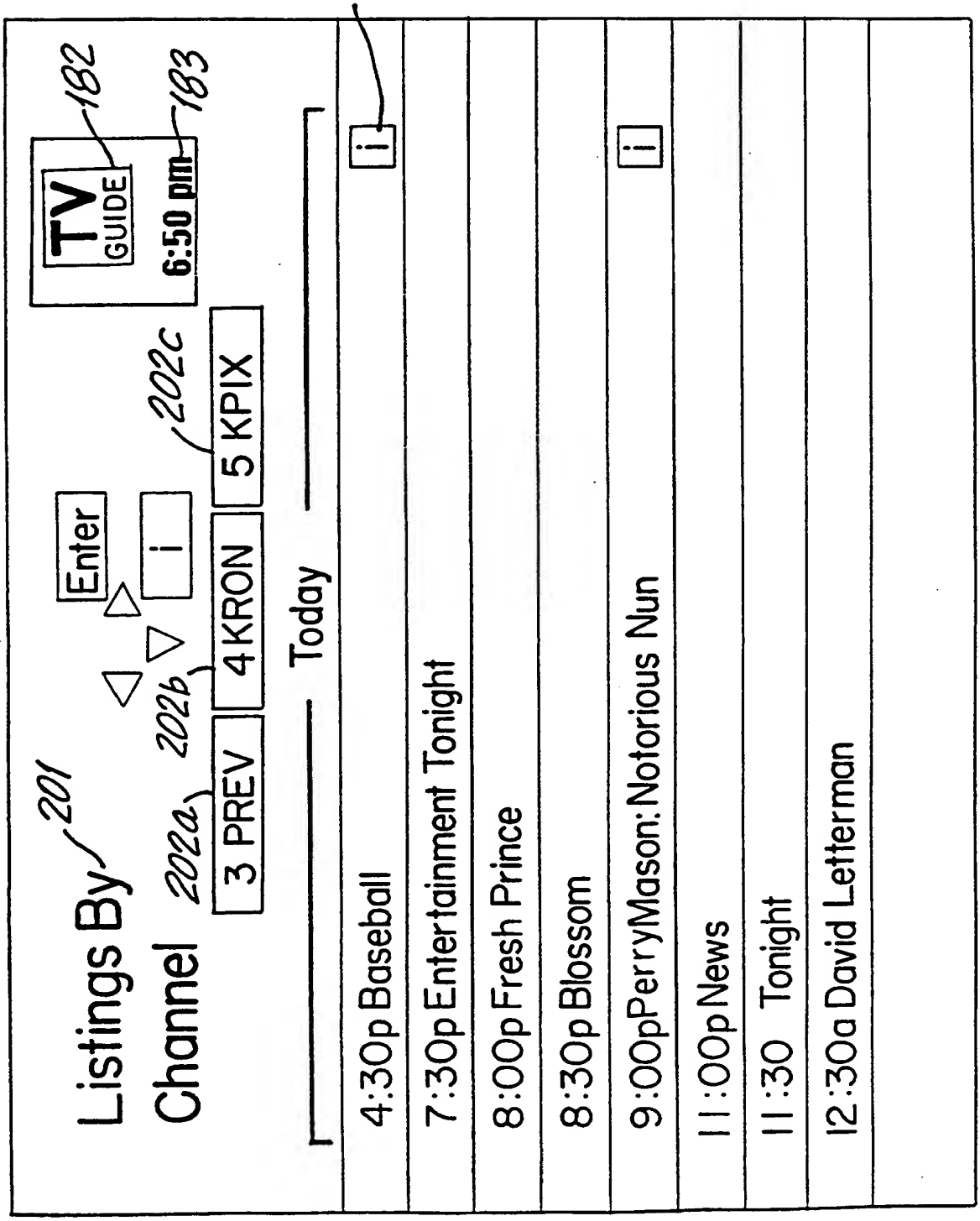
Listings By
Channel
201
202a
202b
202c
3 PREV
4 KRON
5 KPIX
Enter
i
Today
TV GUIDE
182
6:50 pm
183
203
i
i
4:30p Baseball
7:30p Entertainment Tonight
8:00p Fresh Prince
8:30p Blossom
9:00p Perry Mason: Notorious Nun
11:00p News
11:30 Tonight
12:30a David Letterman

FIG. 20

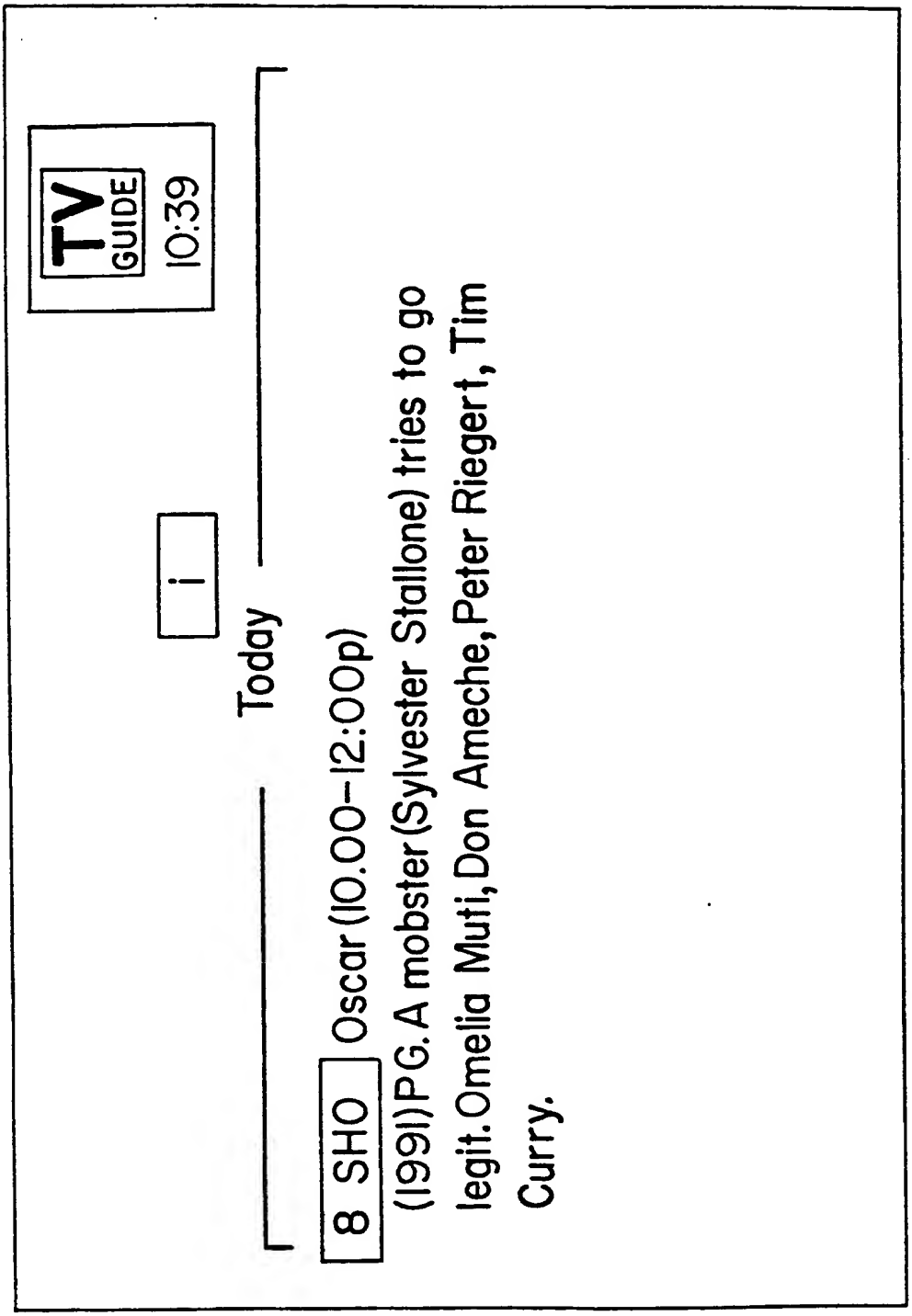
TV GUIDE
10:39
i
Today
8 SHO
Oscar (10.00–12:00p)
(1991) PG. A mobster (Sylvester Stallone) tries to go legit. Omelia Muti, Don Ameche, Peter Riegert, Tim Curry.

FIG. 21

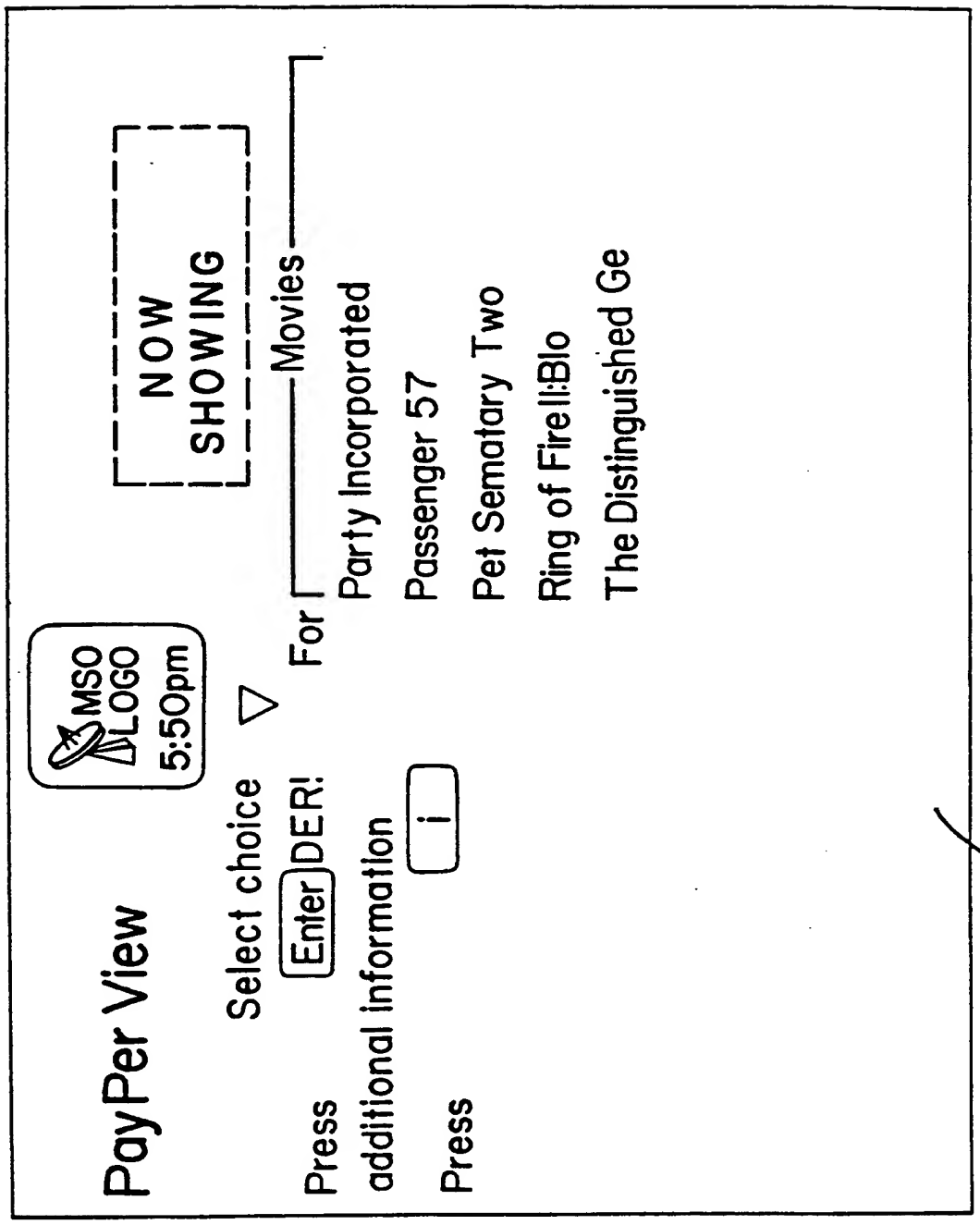
PayPer View
MSO LOGO
5:50pm
NOW SHOWING
Select choice
For
Movies
Party Incorporated
Passenger 57
Pet Sematary Two
Ring of Fire II:Blo
The Distinguished Ge
Press Enter DER!
additional information
Press i
220

FIG. 22

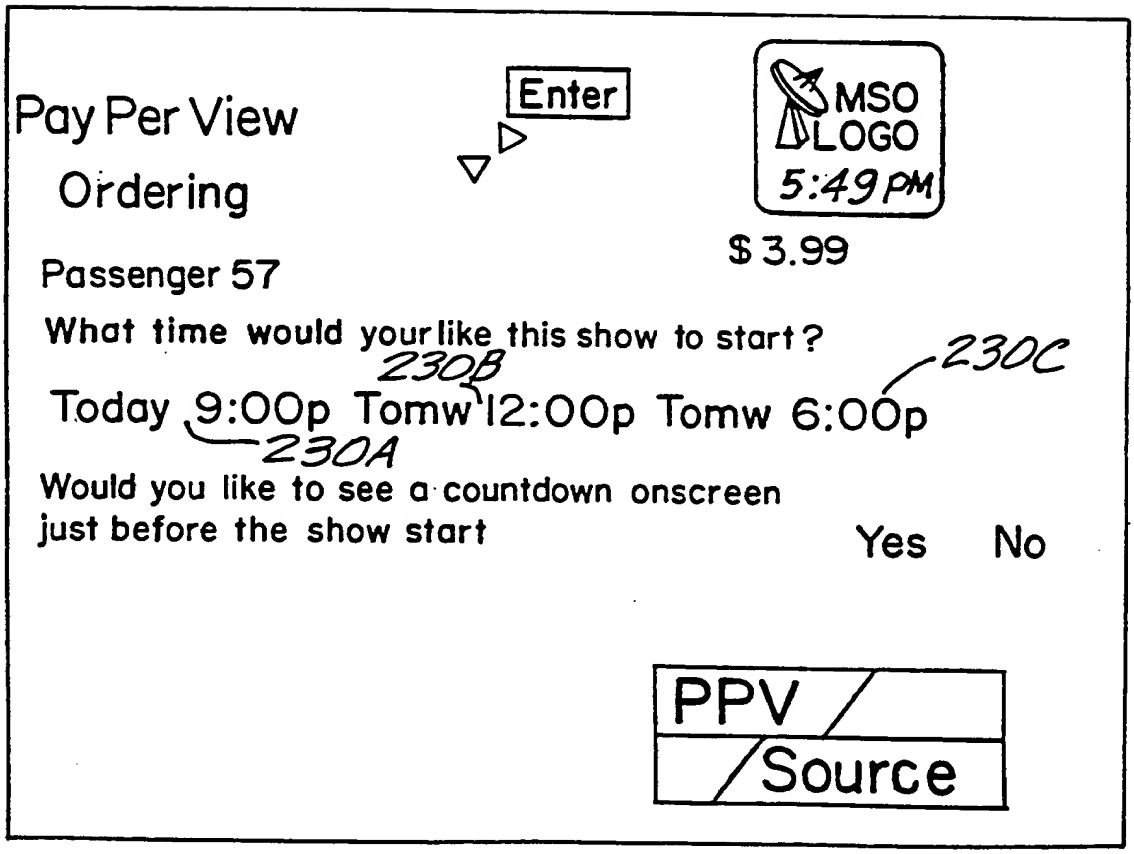
Pay Per View
Ordering
Enter
MSO LOGO
5:49 PM
$ 3.99
Passenger 57
What time would your like this show to start?
230B
230C
Today 9:00p Tomw 12:00p Tomw 6:00p
230A
Would you like to see a countdown onscreen just before the show start
Yes No
PPV
Source

FIG.23

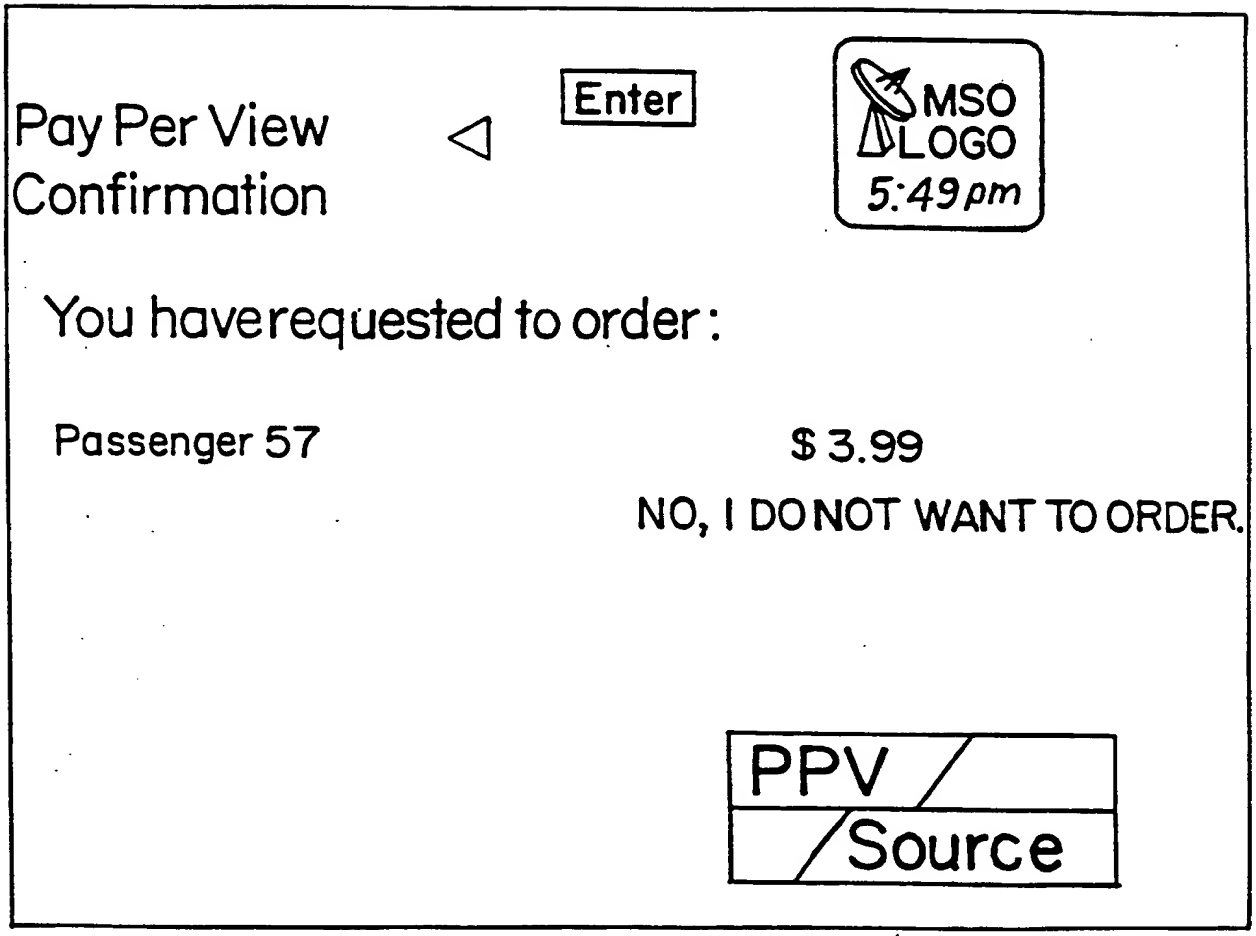
Pay Per View
Confirmation
Enter
MSO
LOGO
5:49 pm
You have requested to order:
Passenger 57
$ 3.99
NO, I DO NOT WANT TO ORDER.
PPV
Source

FIG.24

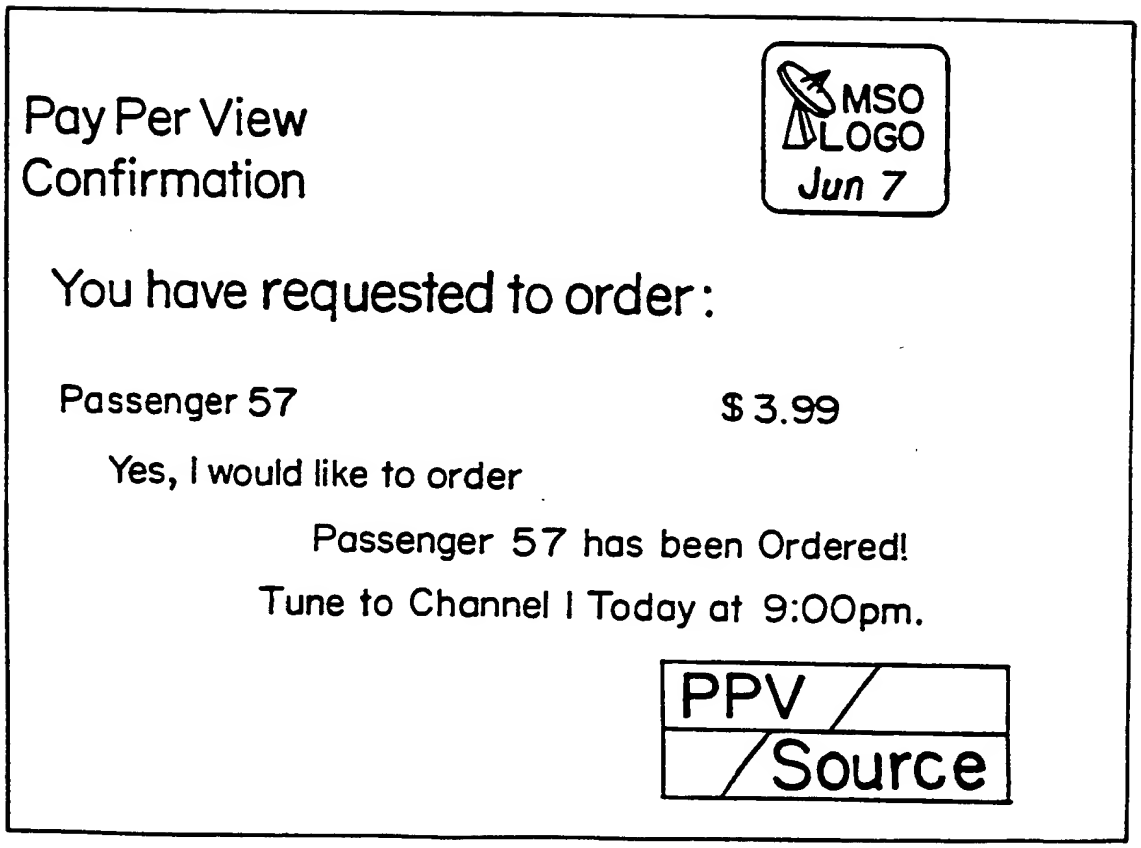
Pay Per View
Confirmation
MSO
LOGO
Jun 7
You have requested to order:
Passenger 57
$ 3.99
Yes, I would like to order
Passenger 57 has been Ordered!
Tune to Channel 1 Today at 9:00pm.
PPV
Source

FIG.24A

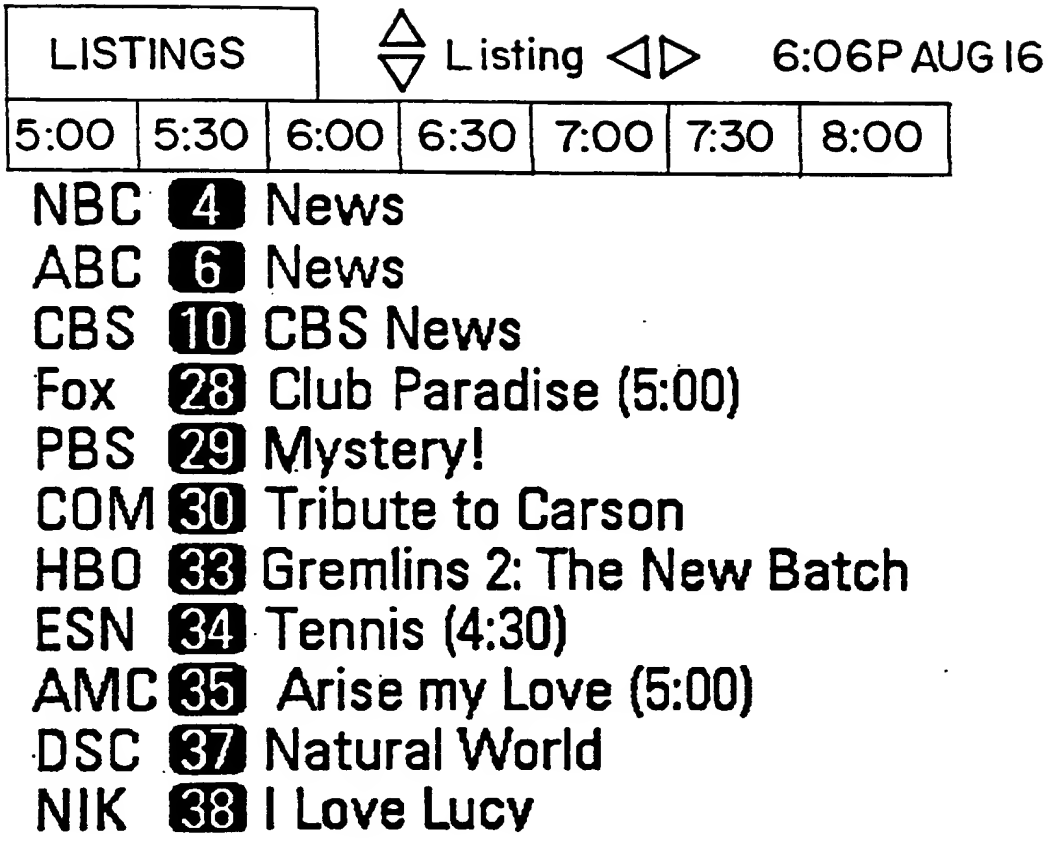
LISTINGS
Listing
6:06P AUG 16
5:00
5:30
6:00
6:30
7:00
7:30
8:00
NBC 4 News
ABC 6 News
CBS 10 CBS News
Fox 28 Club Paradise (5:00)
PBS 29 Mystery!
COM 30 Tribute to Carson
HBO 33 Gremlins 2: The New Batch
ESN 34 Tennis (4:30)
AMC 35 Arise my Love (5:00)
DSC 37 Natural World
NIK 38 I Love Lucy

FIG.25

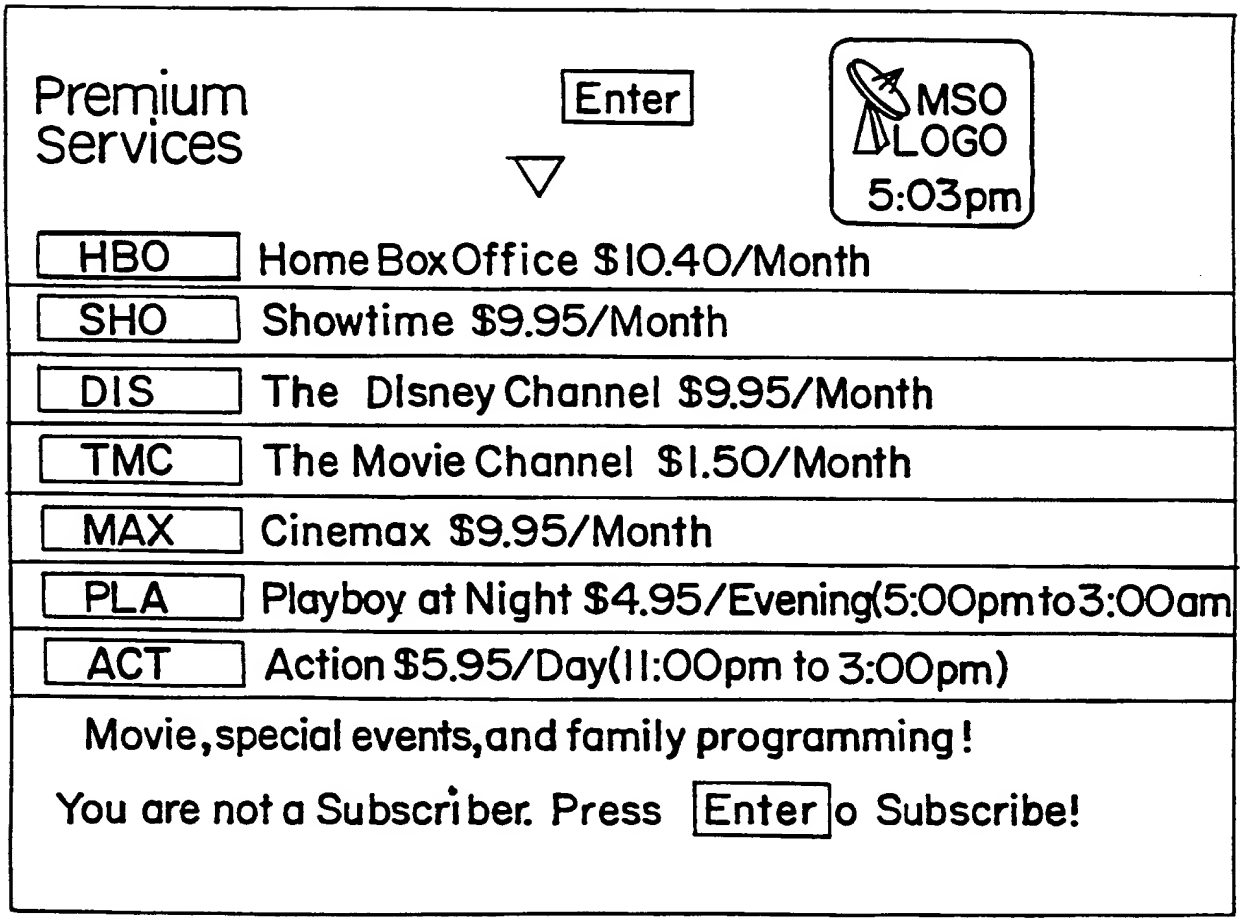
Premium Services
Enter
MSO LOGO
5:03pm
HBO Home Box Office $10.40/Month
SHO Showtime $9.95/Month
DIS The Disney Channel $9.95/Month
TMC The Movie Channel $1.50/Month
MAX Cinemax $9.95/Month
PLA Playboy at Night $4.95/Evening(5:00pm to 3:00am
ACT Action $5.95/Day(11:00pm to 3:00pm)
Movie, special events, and family programming!
You are not a Subscriber. Press Enter to Subscribe!

FIG. 26

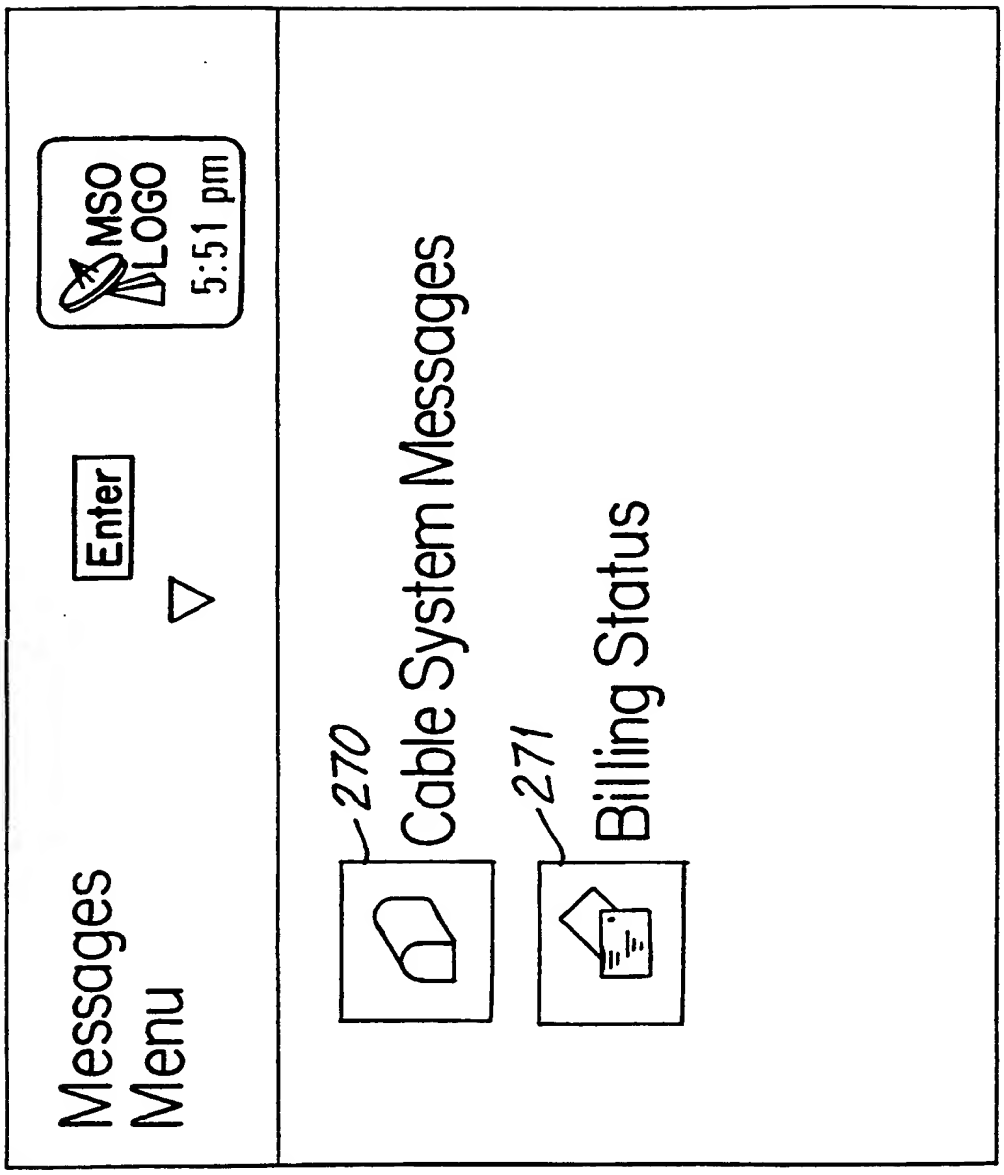
Messages Menu
Enter
MSO LOGO
5:51 pm
270
Cable System Messages
271
Billing Status

FIG.27

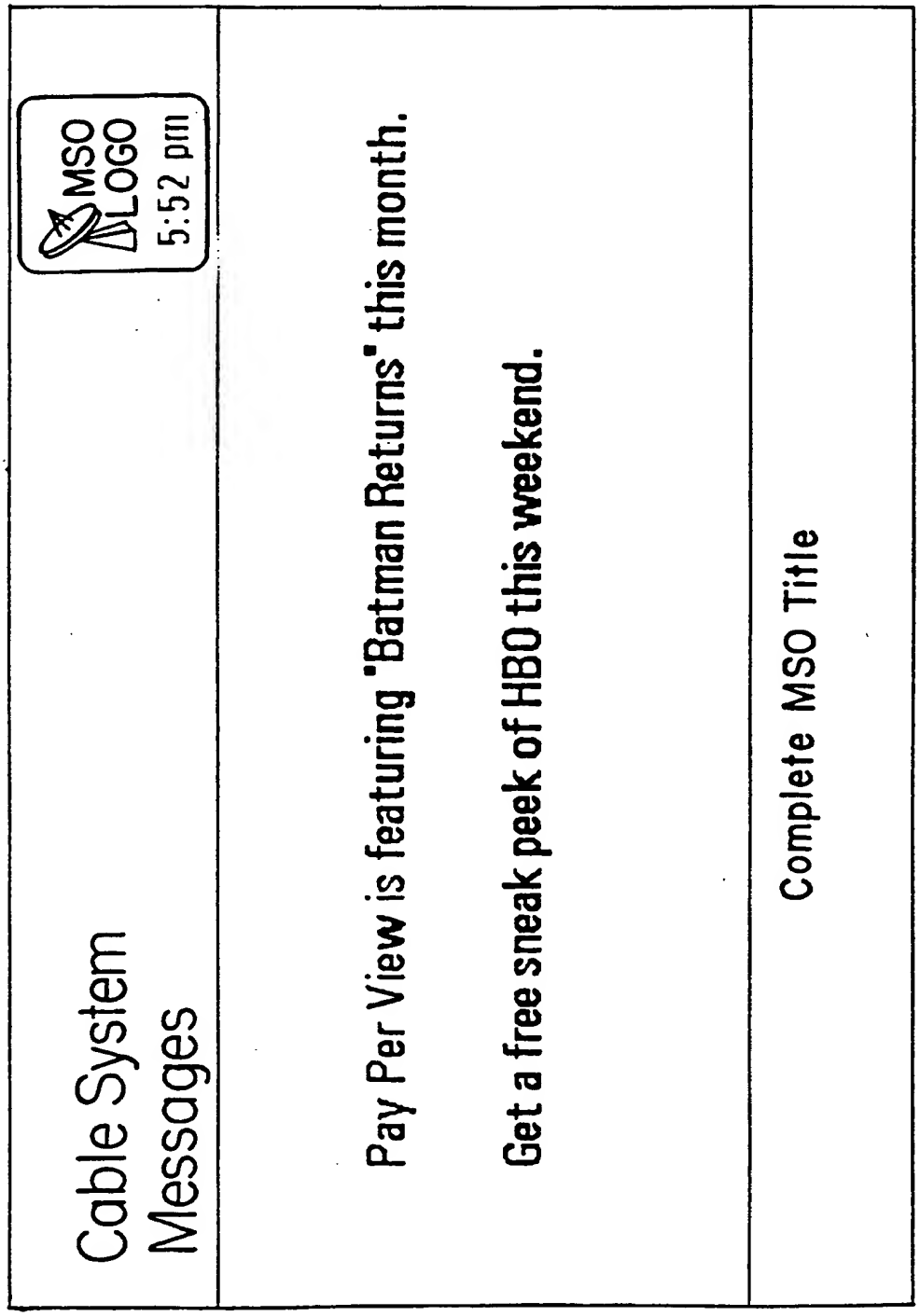
Cable System Messages
MSO LOGO
5:52 pm
Pay Per View is featuring "Batman Returns" this month.
Get a free sneak peek of HBO this weekend.
Complete MSO Title

FIG.28

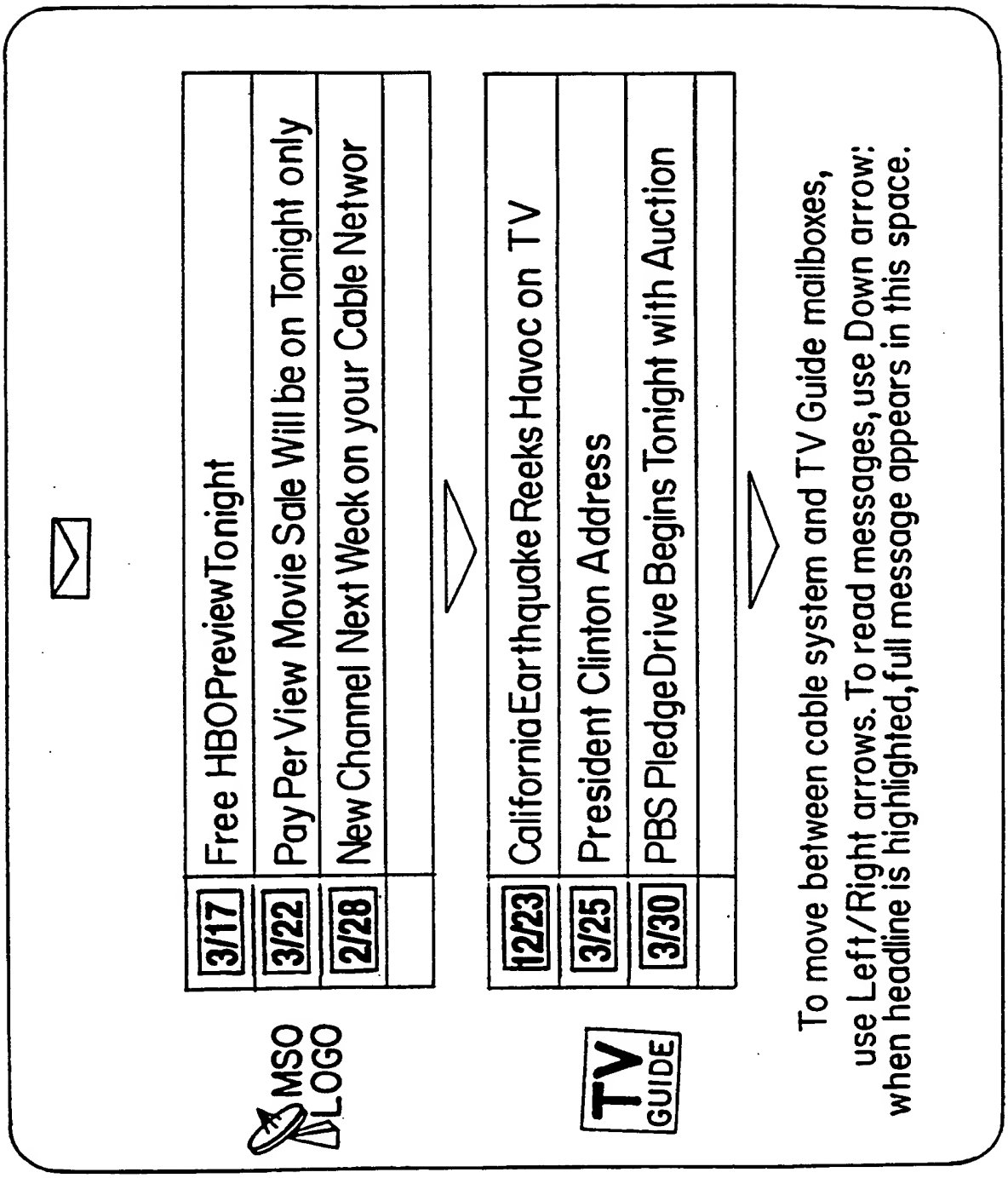
MSO LOGO
3/17 Free HBO Preview Tonight
3/22 Pay Per View Movie Sale Will be on Tonight only
2/28 New Channel Next Weck on your Cable Networ
TV GUIDE
12/23 California Earthquake Reeks Havoc on TV
3/25 President Clinton Address
3/30 PBS Pledge Drive Begins Tonight with Auction
To move between cable system and TV Guide mailboxes, use Left/Right arrows. To read messages, use Down arrow; when headline is highlighted, full message appears in this space.

FIG. 28A

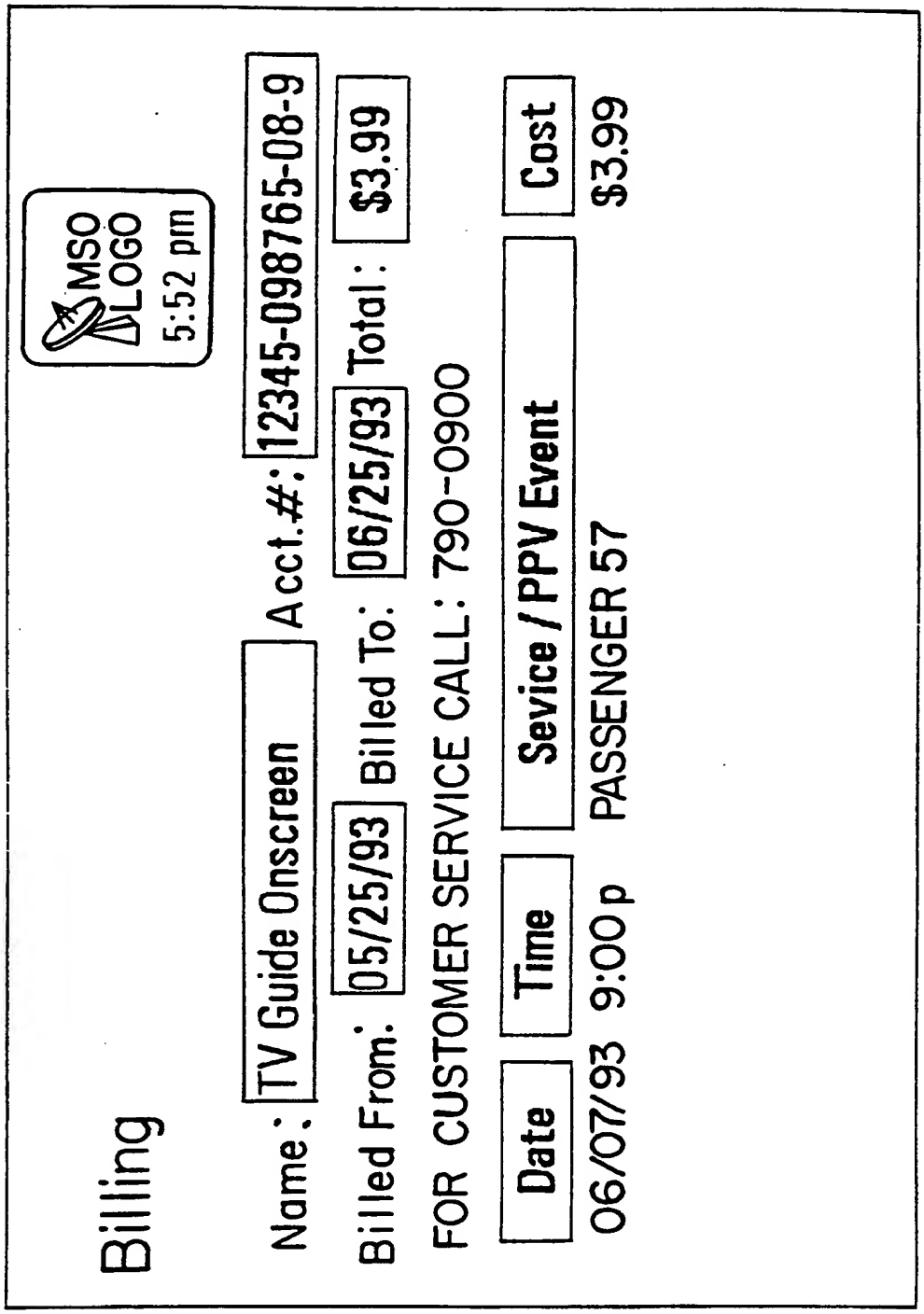
Billing
MSO LOGO
5:52 pm
Name: TV Guide Onscreen
Acct.#: 12345-098765-08-9
Billed From: 05/25/93
Billed To: 06/25/93
Total: $3.99
FOR CUSTOMER SERVICE CALL: 790-0900
Date
Time
Sevice / PPV Event
Cost
06/07/93 9:00p PASSENGER 57 $3.99

FIG.29

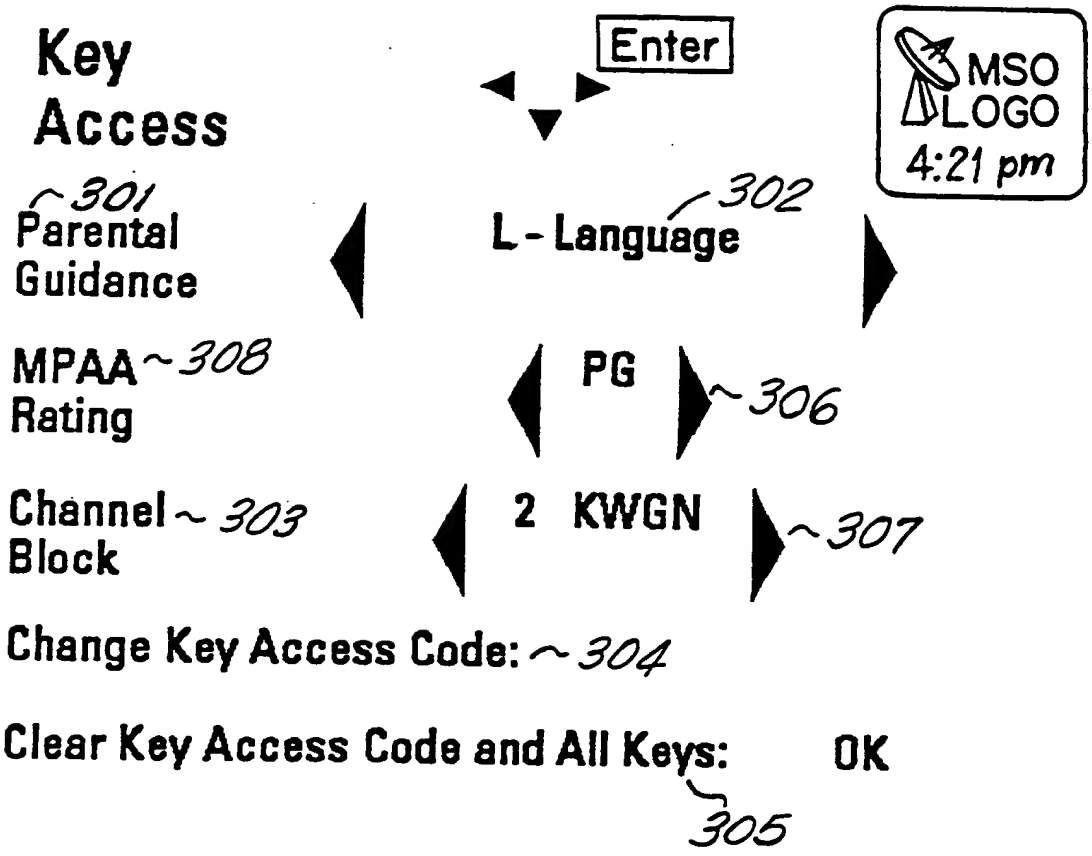
Key Access
Enter
MSO LOGO
4:21 pm
301
Parental Guidance
302
L - Language
MPAA Rating
308
PG
306
Channel Block
303
2 KWGN
307
Change Key Access Code:
304
Clear Key Access Code and All Keys:
OK
305

FIG.30

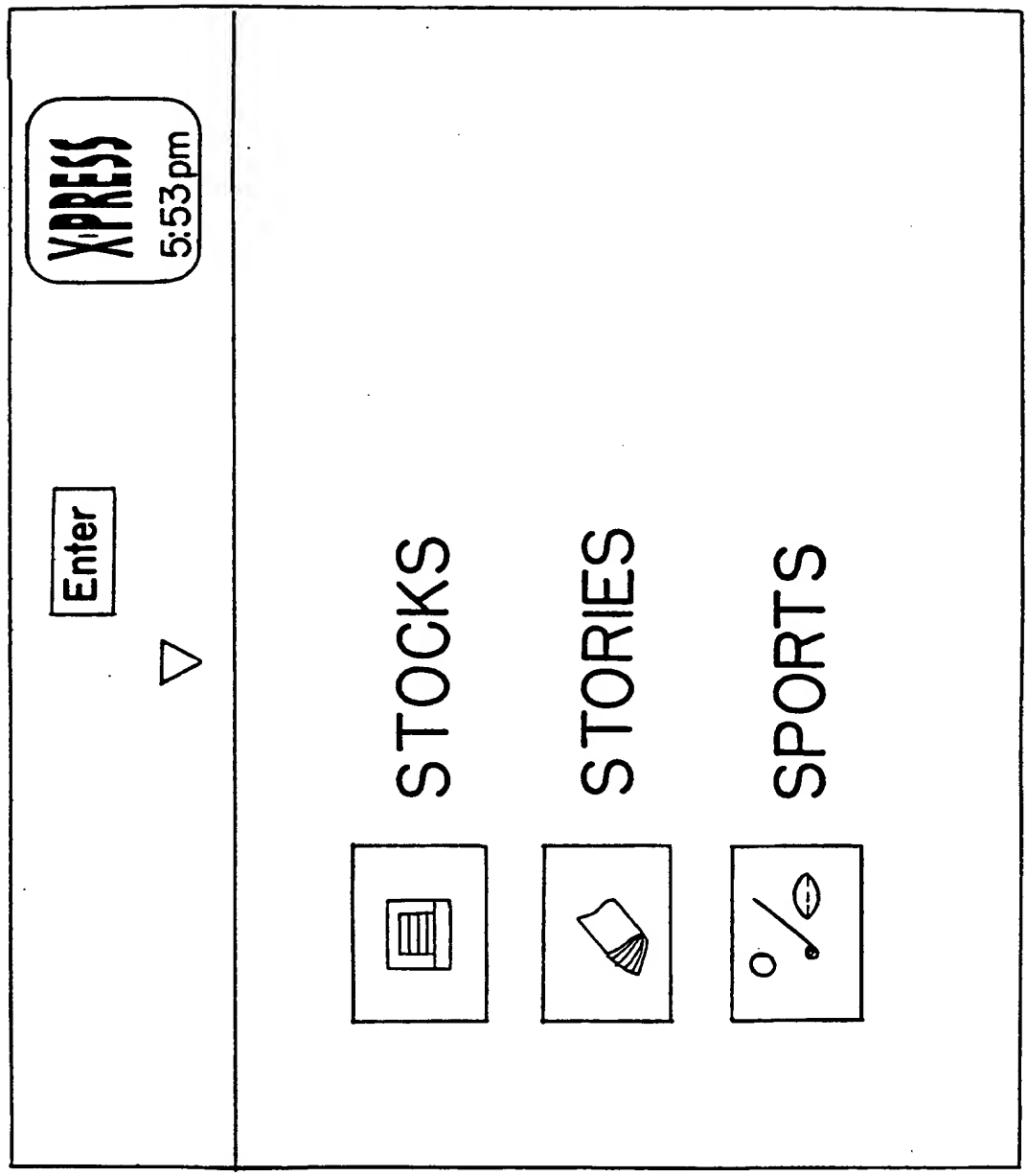


FIG. 31

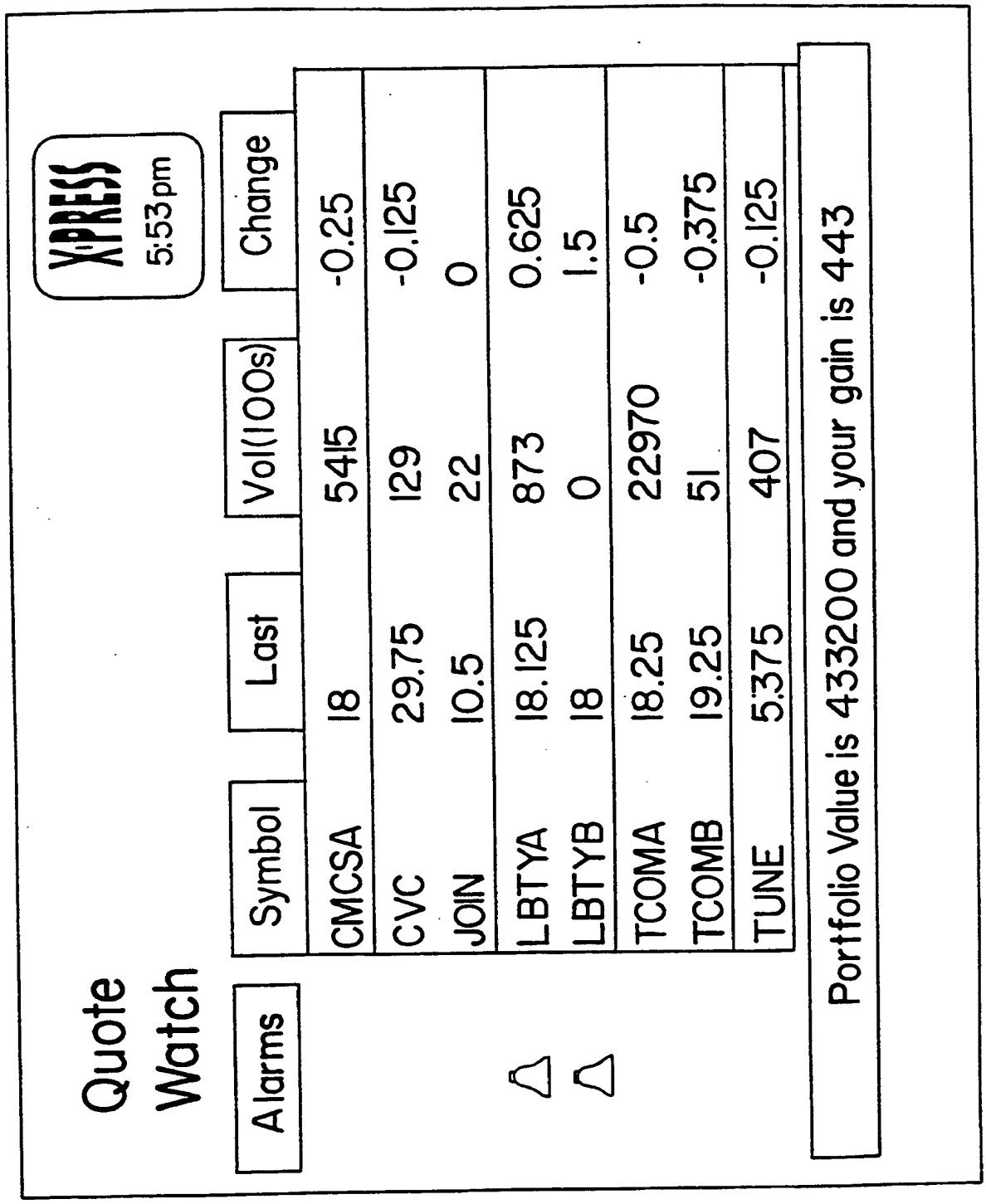
Quote Watch
XPRESS
5:53pm
Alarms
Symbol
Last
Vol(100s)
Change
CMCSA 18 5415 -0.25
CVC 29.75 129 -0.125
JOIN 10.5 22 0
LBTYA 18.125 873 0.625
LBTYB 18 0 1.5
TCOMA 18.25 22970 -0.5
TCOMB 19.25 51 -0.375
TUNE 5.375 407 -0.125
Portfolio Value is 433200 and your gain is 443

FIG. 32

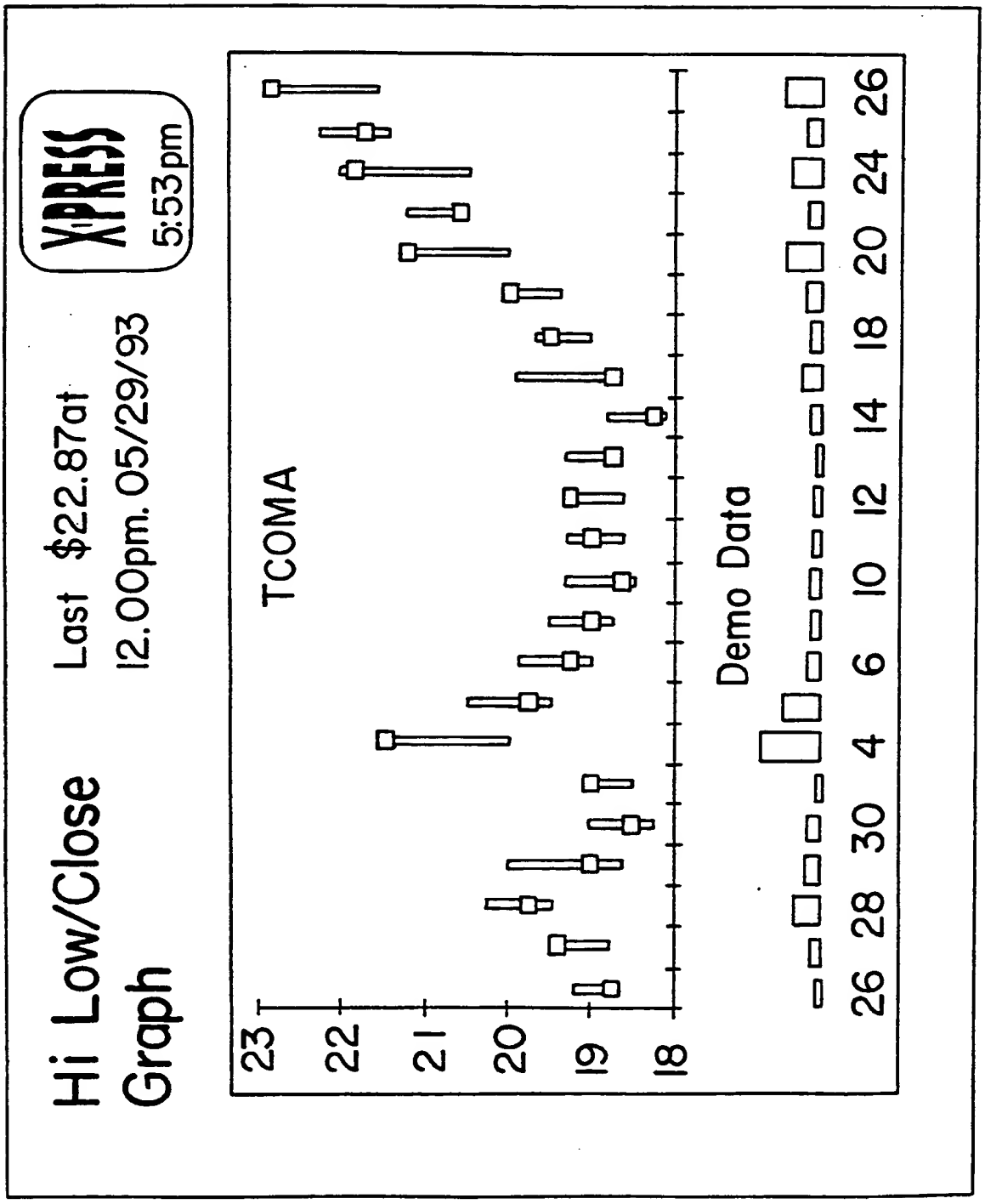
Hi Low/Close Graph
Last $22.87at 12.00pm. 05/29/93
XPRESS 5:53pm
TCOMA
Demo Data
23
22
21
20
19
18
26 28 30 4 6 10 12 14 18 20 24 26

FIG. 33

STORIES

XPRESS
Jun 7

US World News

Cubans use Vitamins to combat epidemic

Geneva - A costly campaign to provide vitamins to all Cubans has helped curb a mysterious epidemic that has afflicted thousands with vision problems, a World Health Organization offical said yesterday.

The outbreak of optical neuritis has dimmed the vision of about 20,000 Cubans and a related malady has affected 6,000 other people, mostly women.

FIG.34

SPORTS

X-PRESS
5:54 pm

Major League Baseball

Yesterday in National League Action
Colorado 7, Houston 5
San Francisco 5, Chicago 4

Yesterday in American League Action
Detroit 4, Boston 1
Toronto 4, Milwaukee 2

FIG.35

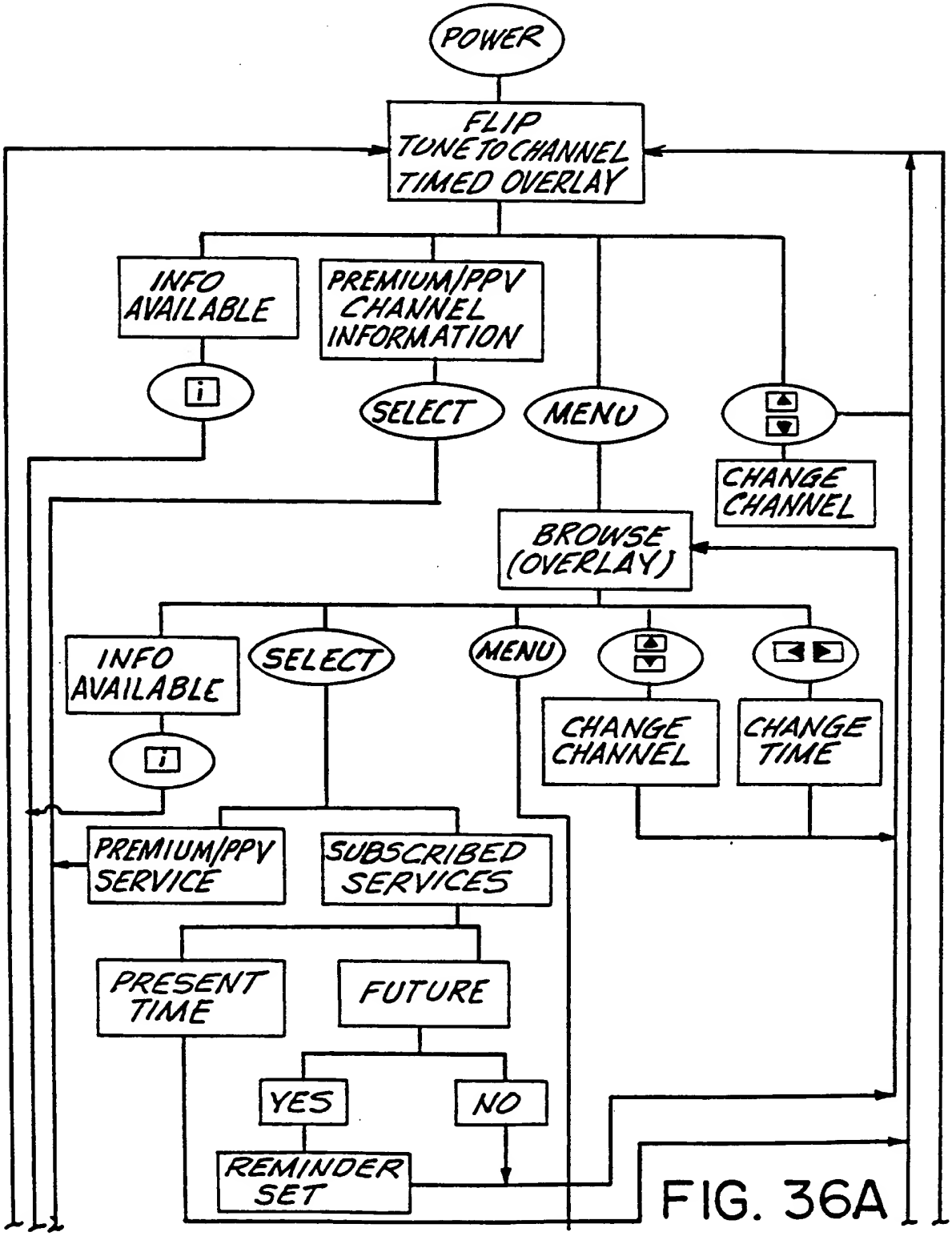
POWER
FLIP TUNE TO CHANNEL TIMED OVERLAY
INFO AVAILABLE
PREMIUM/PPV CHANNEL INFORMATION
i
SELECT
MENU
CHANGE CHANNEL
BROWSE (OVERLAY)
INFO AVAILABLE
SELECT
MENU
CHANGE CHANNEL
CHANGE TIME
i
PREMIUM/PPV SERVICE
SUBSCRIBED SERVICES
PRESENT TIME
FUTURE
YES
NO
REMINDER SET

FIG. 36A

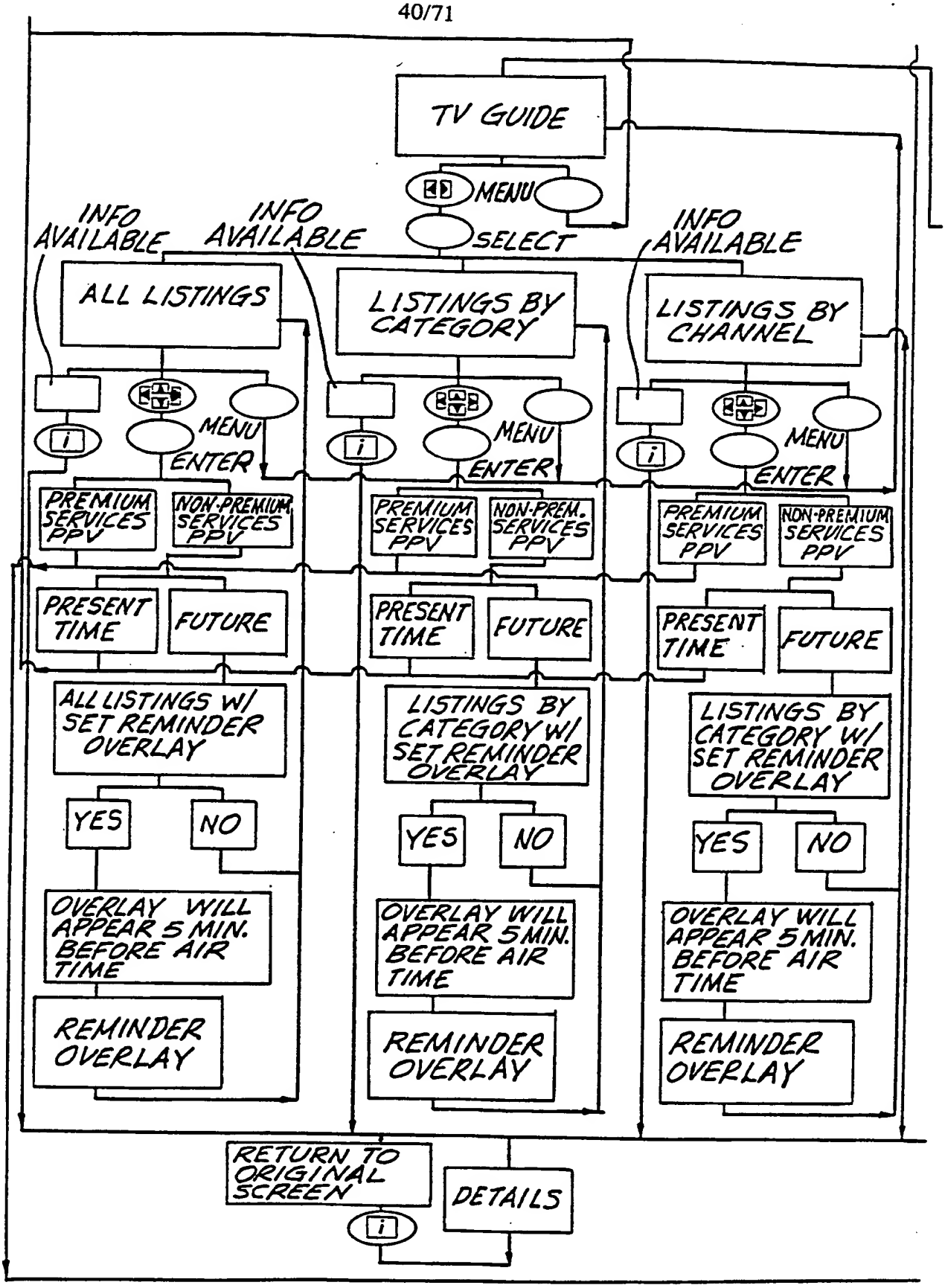
TV GUIDE
MENU
SELECT
INFO AVAILABLE
INFO AVAILABLE
INFO AVAILABLE
ALL LISTINGS
LISTINGS BY CATEGORY
LISTINGS BY CHANNEL
MENU
ENTER
PREMIUM SERVICES PPV
NON-PREMIUM SERVICES PPV
PRESENT TIME
FUTURE
ALL LISTINGS W/ SET REMINDER OVERLAY
LISTINGS BY CATEGORY W/ SET REMINDER OVERLAY
YES
NO
OVERLAY WILL APPEAR 5 MIN. BEFORE AIR TIME
REMINDER OVERLAY
RETURN TO ORIGINAL SCREEN
DETAILS

FIG. 36B

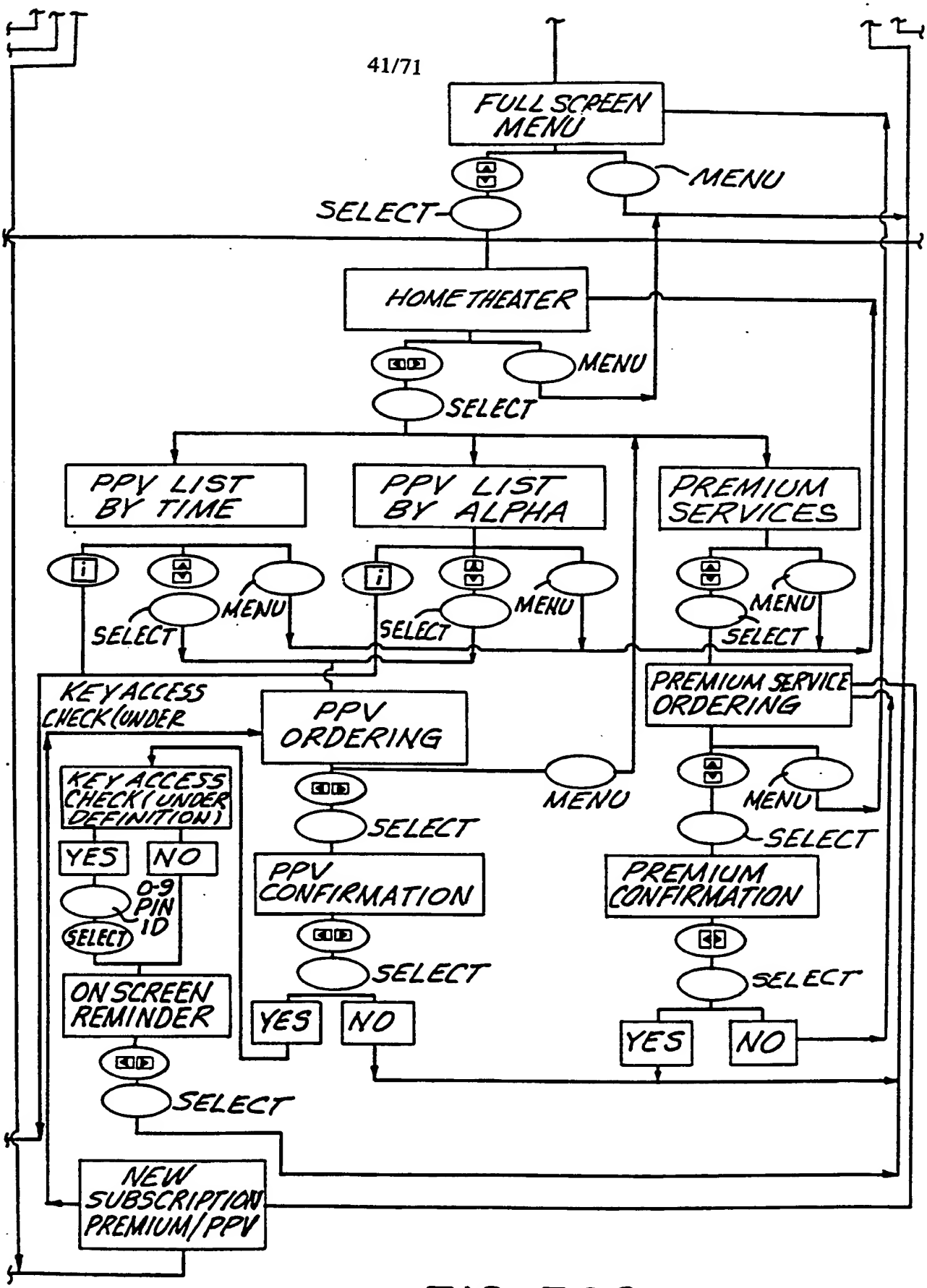
FULL SCREEN MENU
MENU
SELECT
HOME THEATER
MENU
SELECT
PPV LIST BY TIME
PPV LIST BY ALPHA
PREMIUM SERVICES
MENU
SELECT
KEY ACCESS CHECK (UNDER
PPV ORDERING
PREMIUM SERVICE ORDERING
KEY ACCESS CHECK (UNDER DEFINITION)
YES
NO
0-9 PIN ID
SELECT
ON SCREEN REMINDER
PPV CONFIRMATION
PREMIUM CONFIRMATION
NEW SUBSCRIPTION PREMIUM/PPV

FIG. 36C

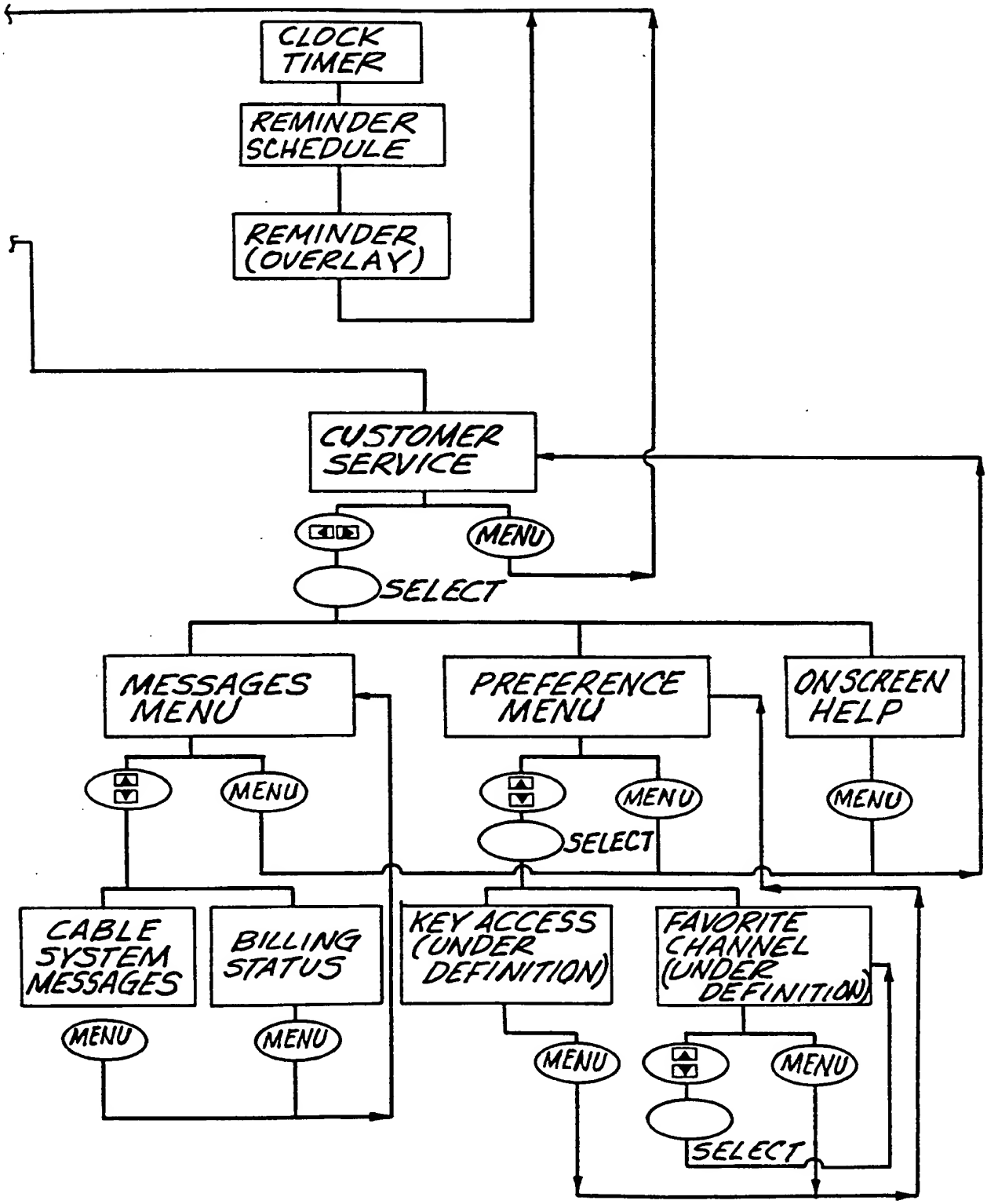
CLOCK TIMER
REMINDER SCHEDULE
REMINDER (OVERLAY)
CUSTOMER SERVICE
MENU
SELECT
MESSAGES MENU
PREFERENCE MENU
ON SCREEN HELP
MENU
MENU
MENU
SELECT
CABLE SYSTEM MESSAGES
BILLING STATUS
KEY ACCESS (UNDER DEFINITION)
FAVORITE CHANNEL (UNDER DEFINITION)
MENU
MENU
MENU
MENU
SELECT

FIG. 36D

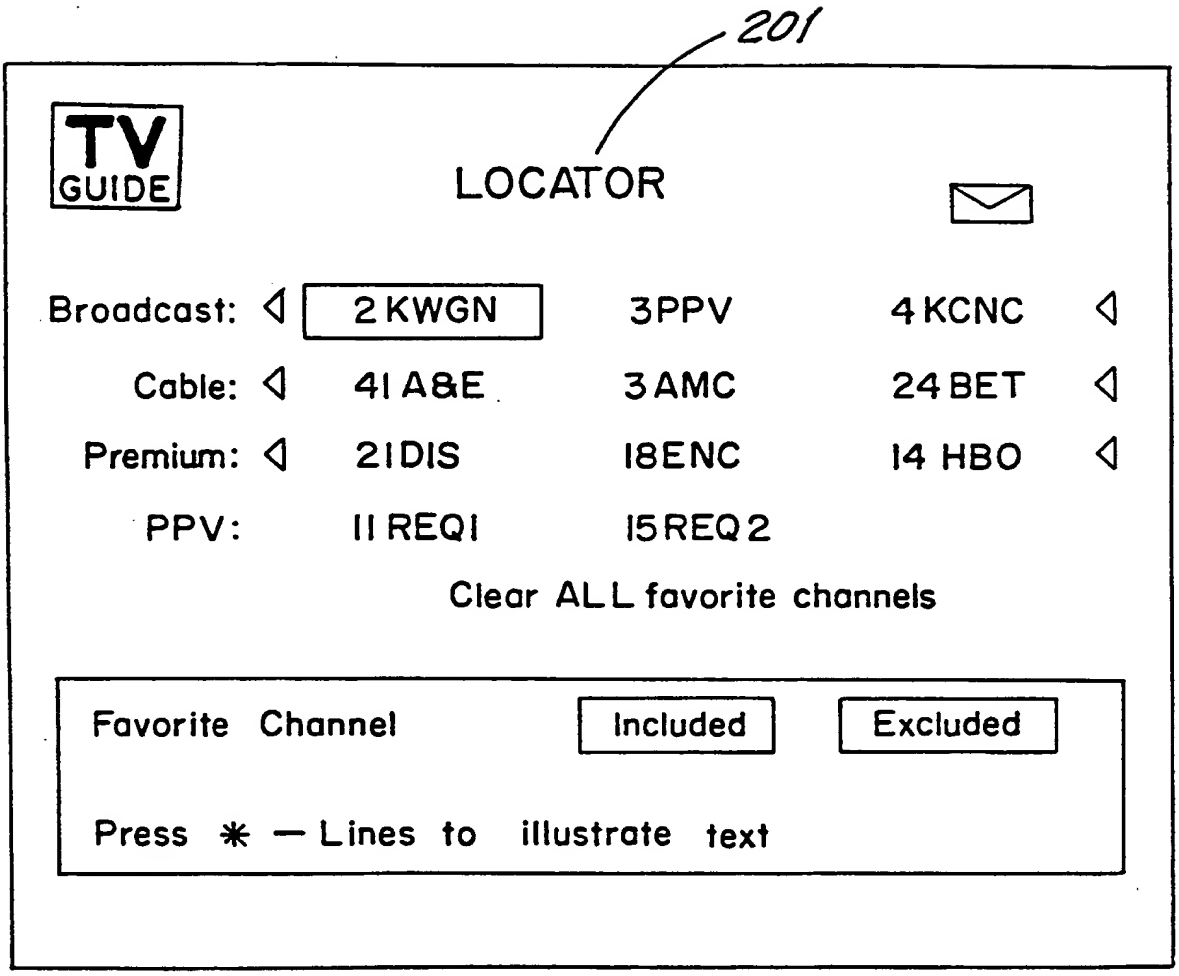
201
TV GUIDE
LOCATOR
Broadcast: 2 KWGN 3 PPV 4 KCNC
Cable: 41 A&E 3 AMC 24 BET
Premium: 21 DIS 18 ENC 14 HBO
PPV: 11 REQ1 15 REQ2
Clear ALL favorite channels
Favorite Channel
Included
Excluded
Press * — Lines to illustrate text

FIG. 37

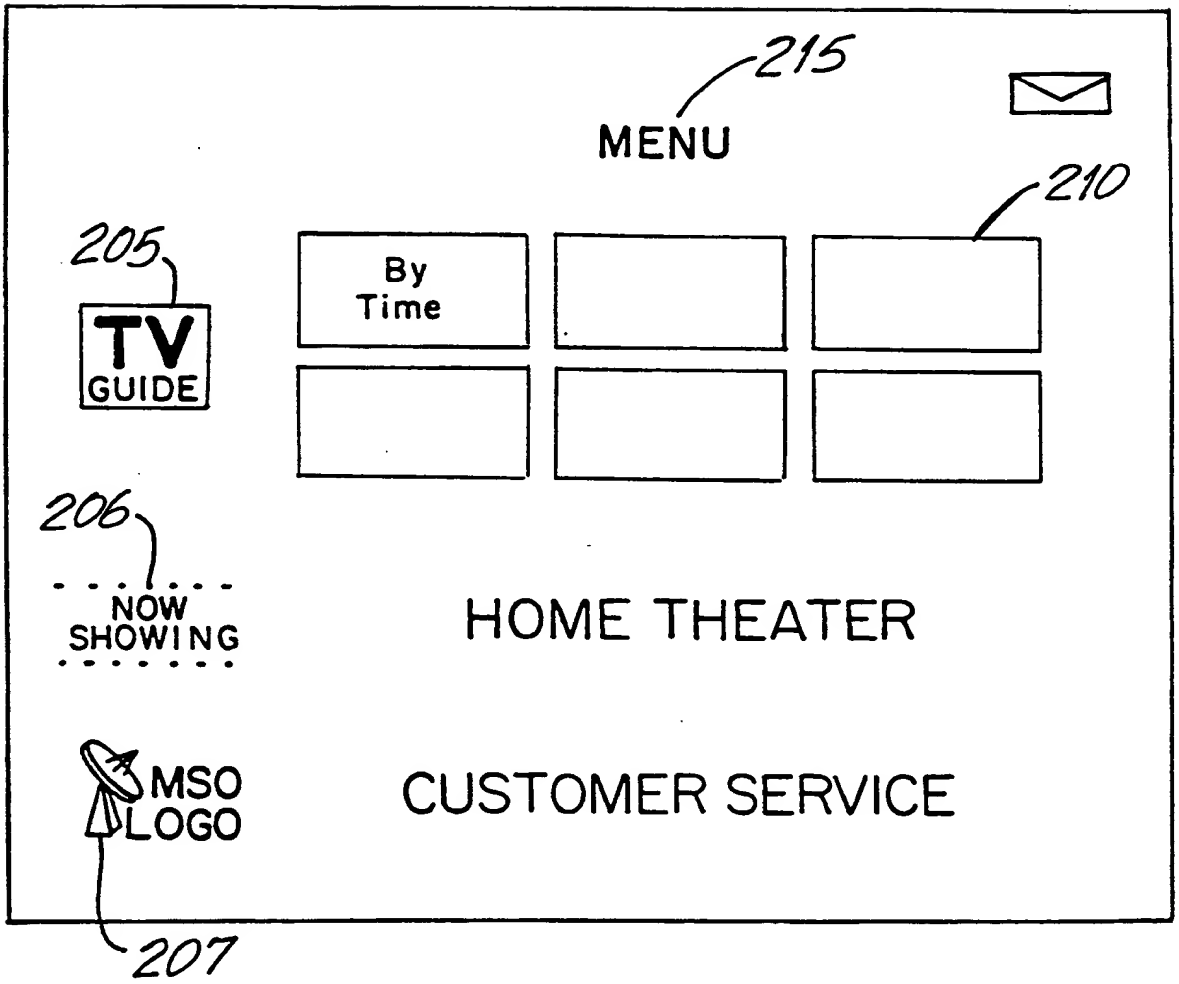
215
MENU
210
205
TV GUIDE
By Time
206
NOW SHOWING
HOME THEATER
MSO LOGO
CUSTOMER SERVICE
207

FIG.38

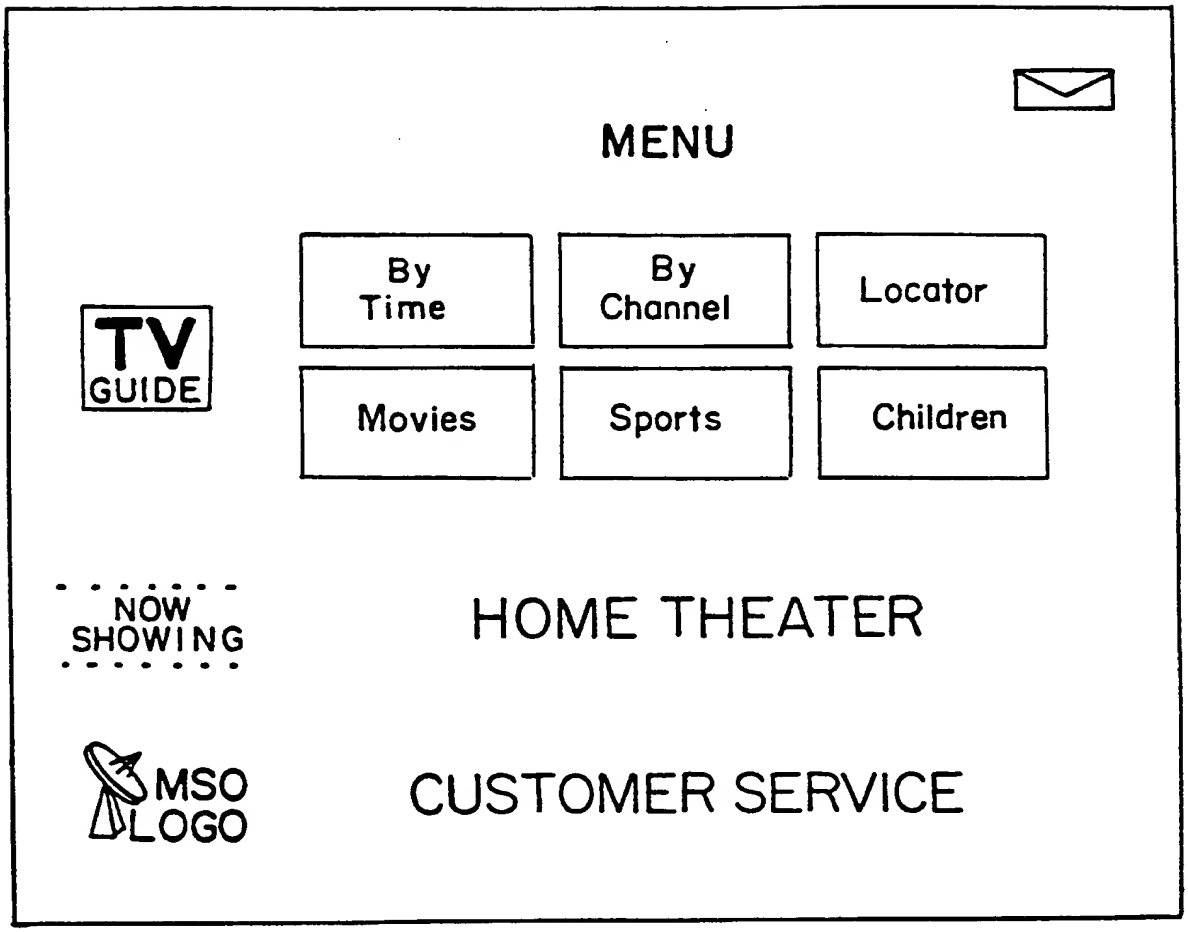
MENU
By Time
By Channel
Locator
TV GUIDE
Movies
Sports
Children
NOW SHOWING
HOME THEATER
MSO LOGO
CUSTOMER SERVICE

FIG.38A

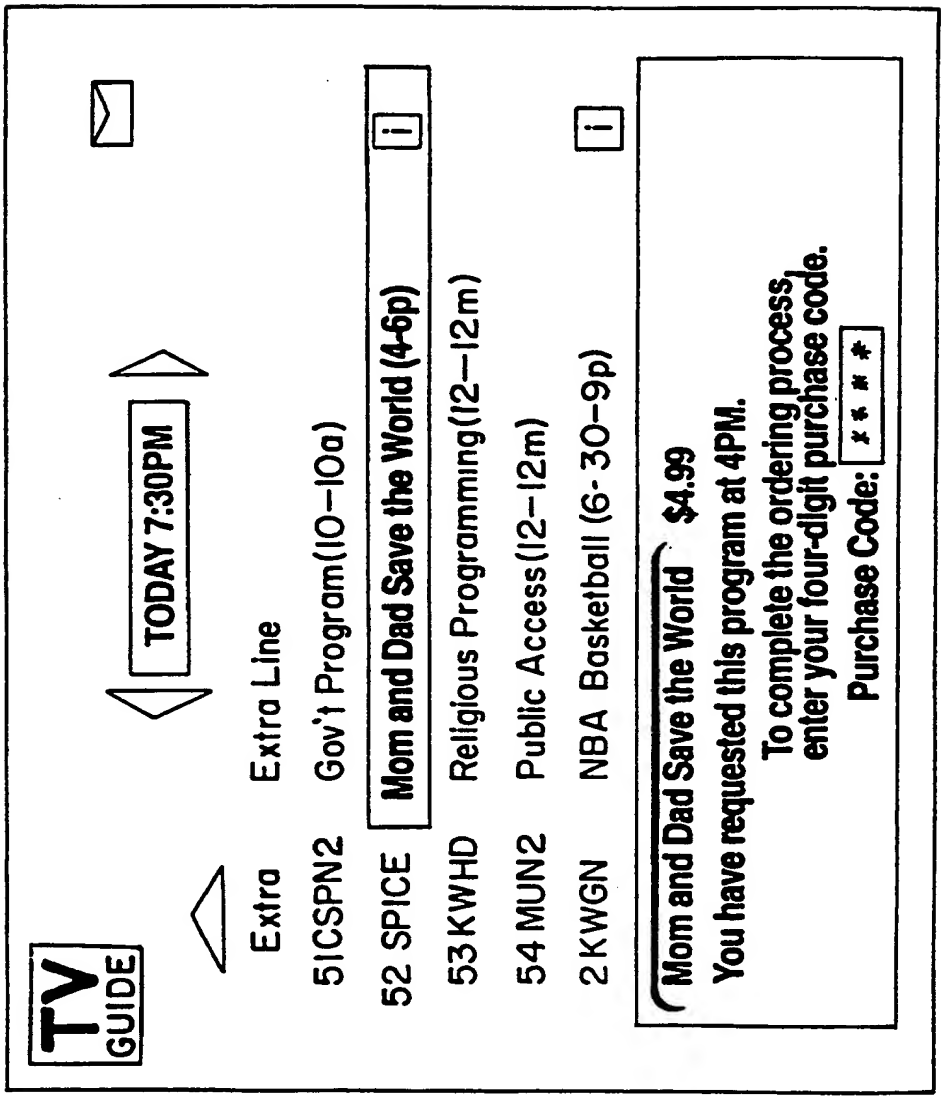
TV GUIDE
TODAY 7:30PM
Extra
Extra Line
51CSPN2
Gov't Program(10–10a)
52 SPICE
Mom and Dad Save the World (4-6p)
53 KWHD
Religious Programming(12–12m)
54 MUN2
Public Access(12–12m)
2 KWGN
NBA Basketball (6-30–9p)
Mom and Dad Save the World $4.99
You have requested this program at 4PM.
To complete the ordering process,
enter your four-digit purchase code.
Purchase Code: * * * *

FIG. 38B

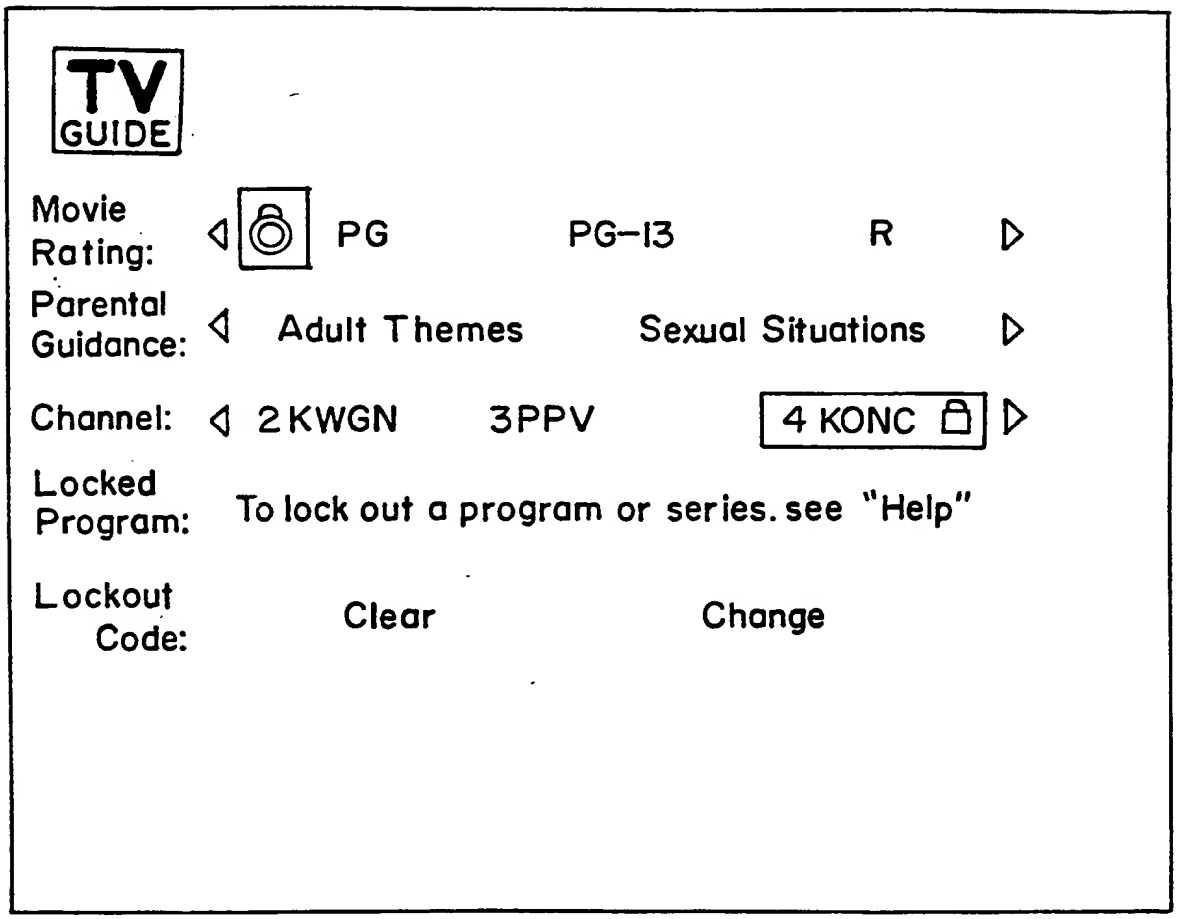
TV GUIDE
Movie Rating:
PG
PG-13
R
Parental Guidance:
Adult Themes
Sexual Situations
Channel:
2 KWGN
3 PPV
4 KONC
Locked Program:
To lock out a program or series. see "Help"
Lockout Code:
Clear
Change

FIG. 39

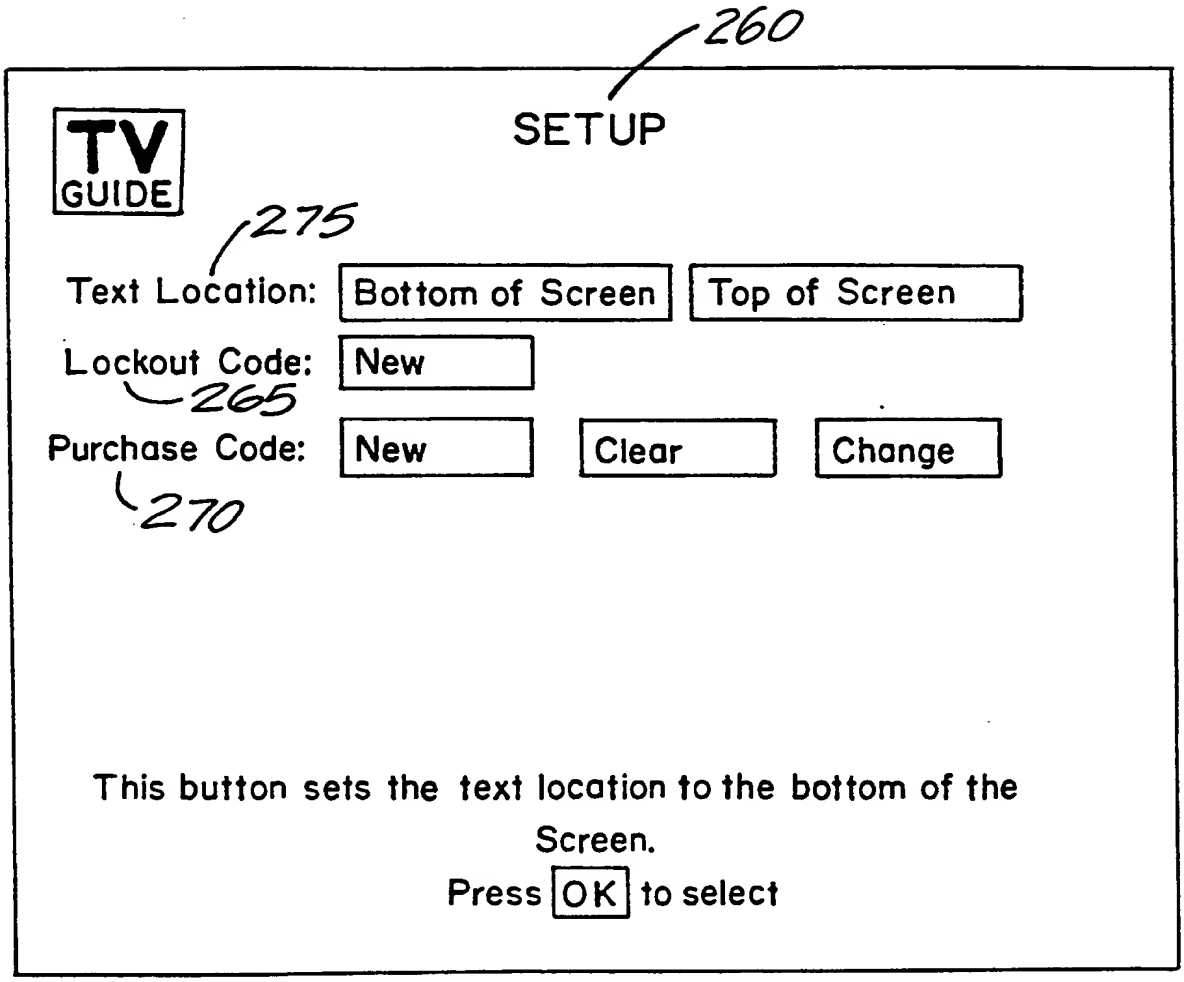
260
SETUP
TV GUIDE
275
Text Location:
Bottom of Screen
Top of Screen
Lockout Code:
New
265
Purchase Code:
New
Clear
Change
270
This button sets the text location to the bottom of the Screen.
Press OK to select

FIG. 40

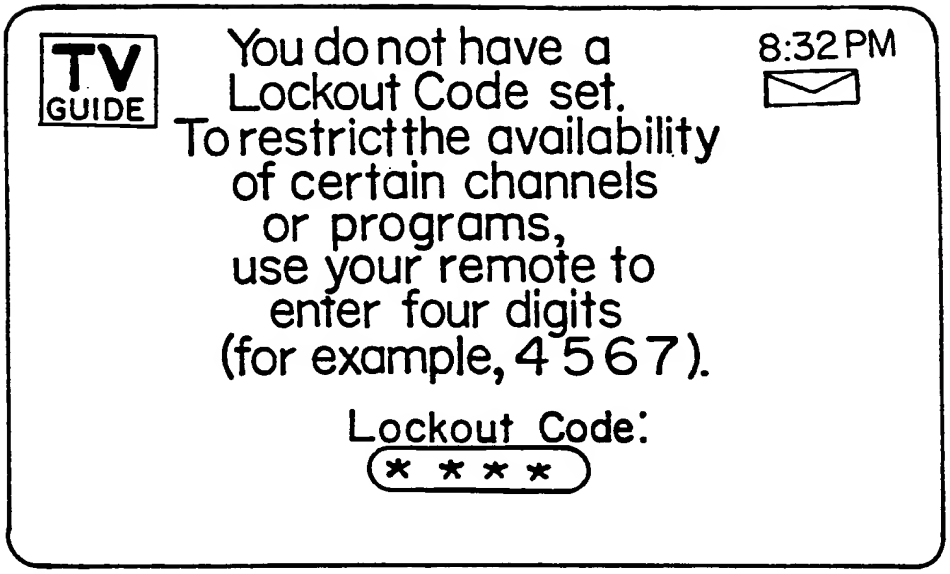


FIG.40A

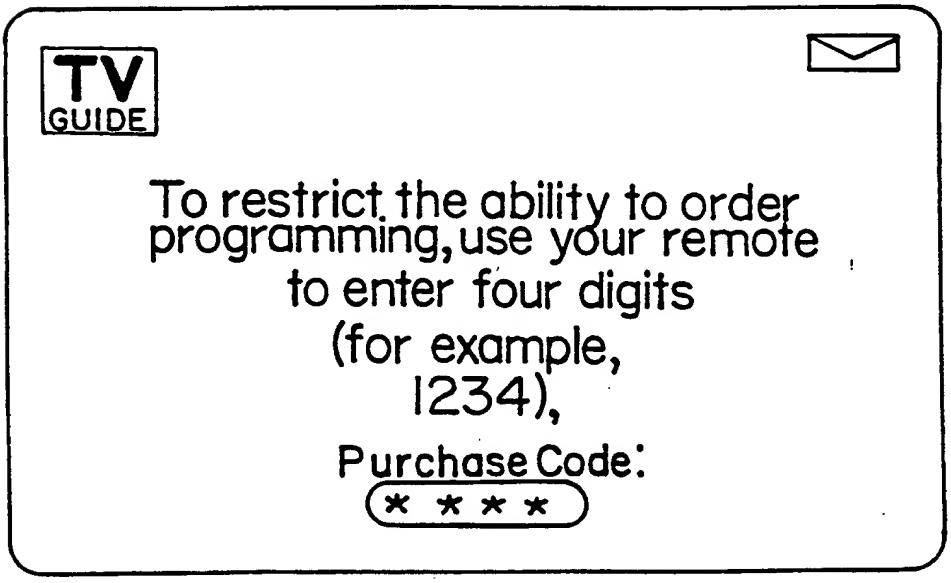


FIG.40B

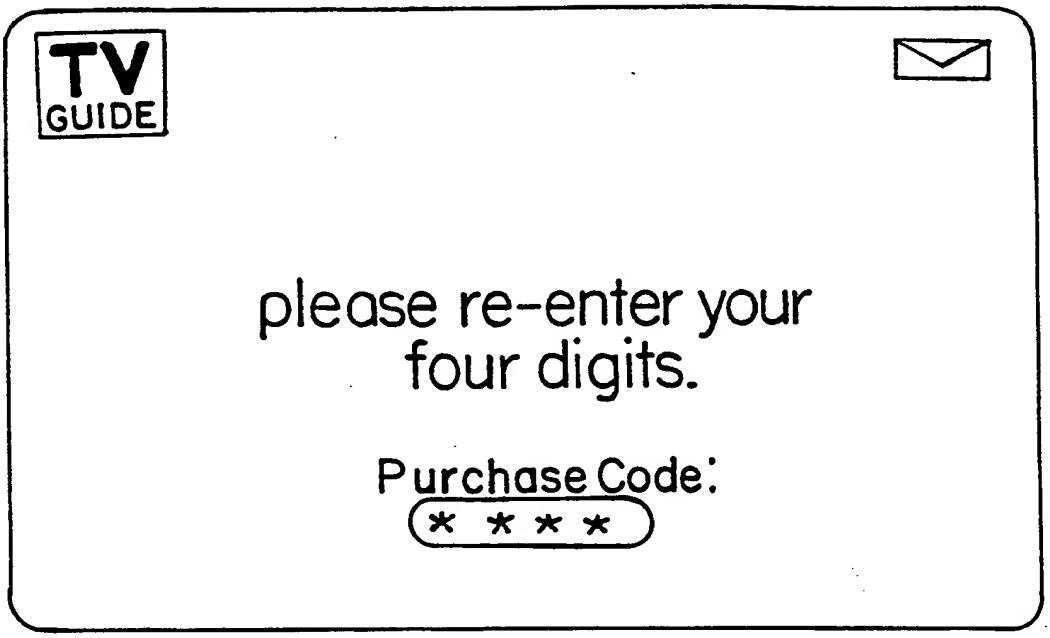


FIG.40C

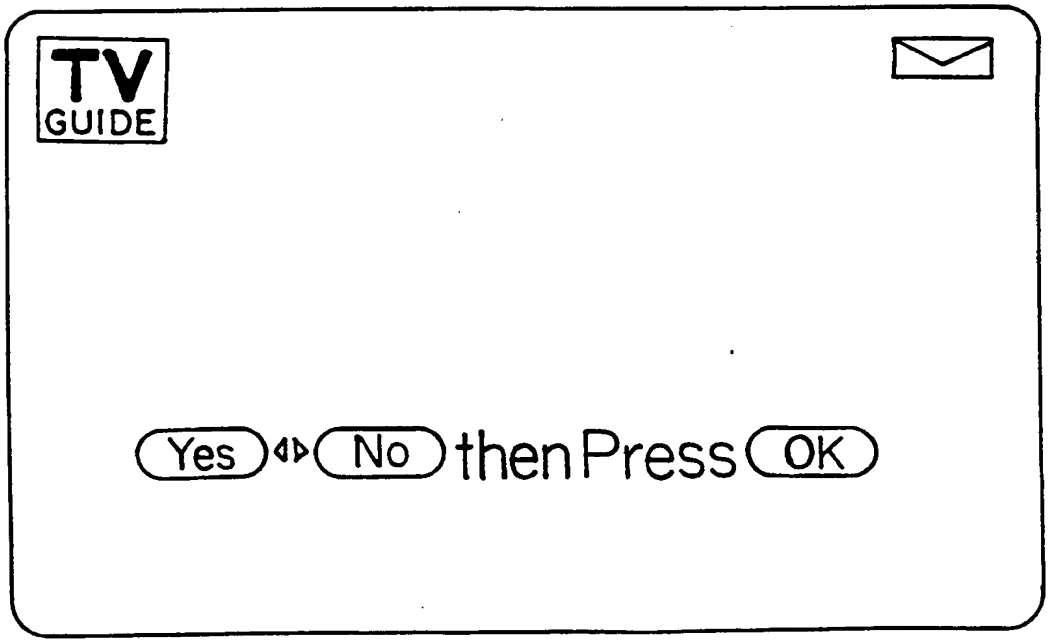


FIG.40D

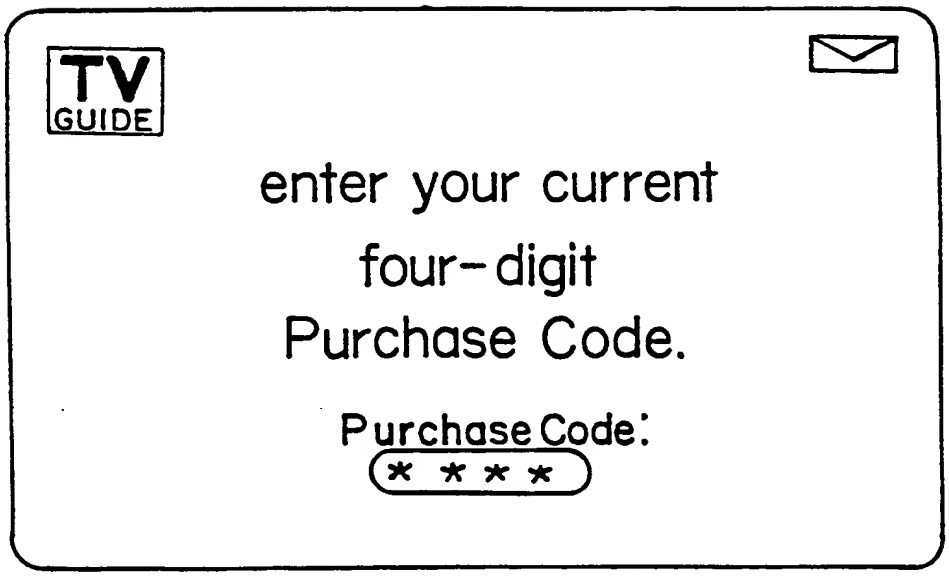
TV
GUIDE
enter your current
four-digit
Purchase Code.
Purchase Code:
* * * *

FIG.40E

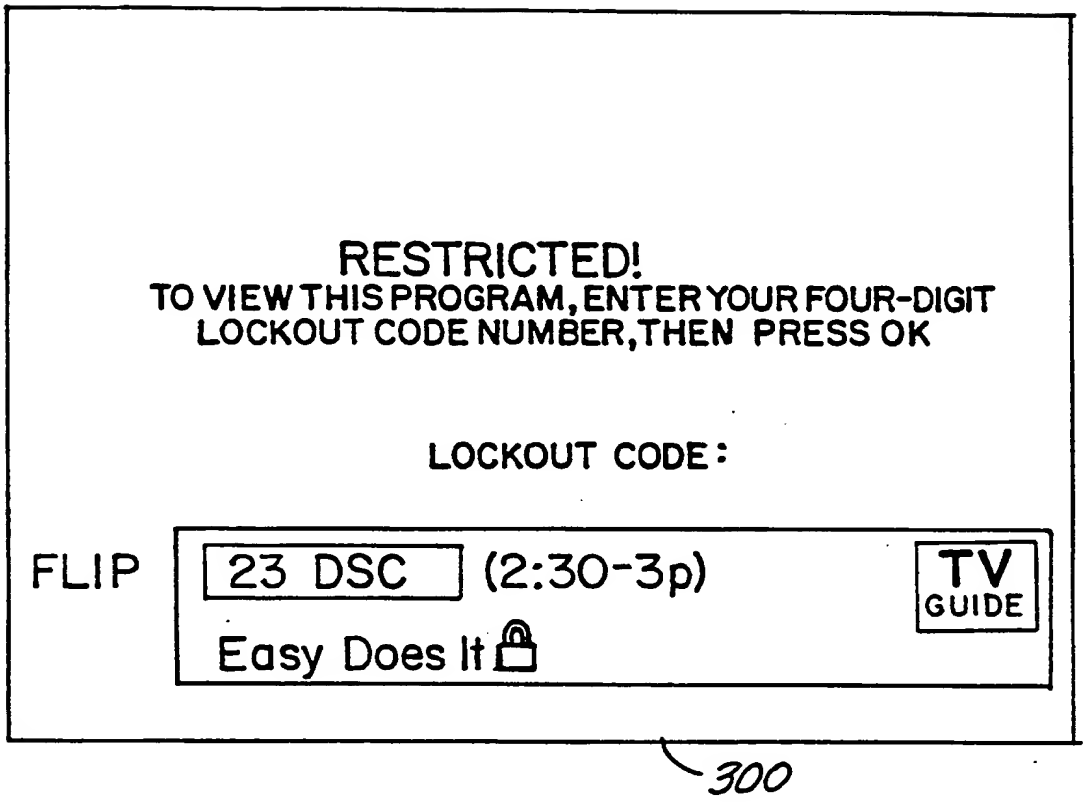
RESTRICTED!
TO VIEW THIS PROGRAM, ENTER YOUR FOUR-DIGIT LOCKOUT CODE NUMBER, THEN PRESS OK
LOCKOUT CODE:
FLIP
23 DSC
(2:30-3p)
Easy Does It
TV GUIDE
300

FIG.41

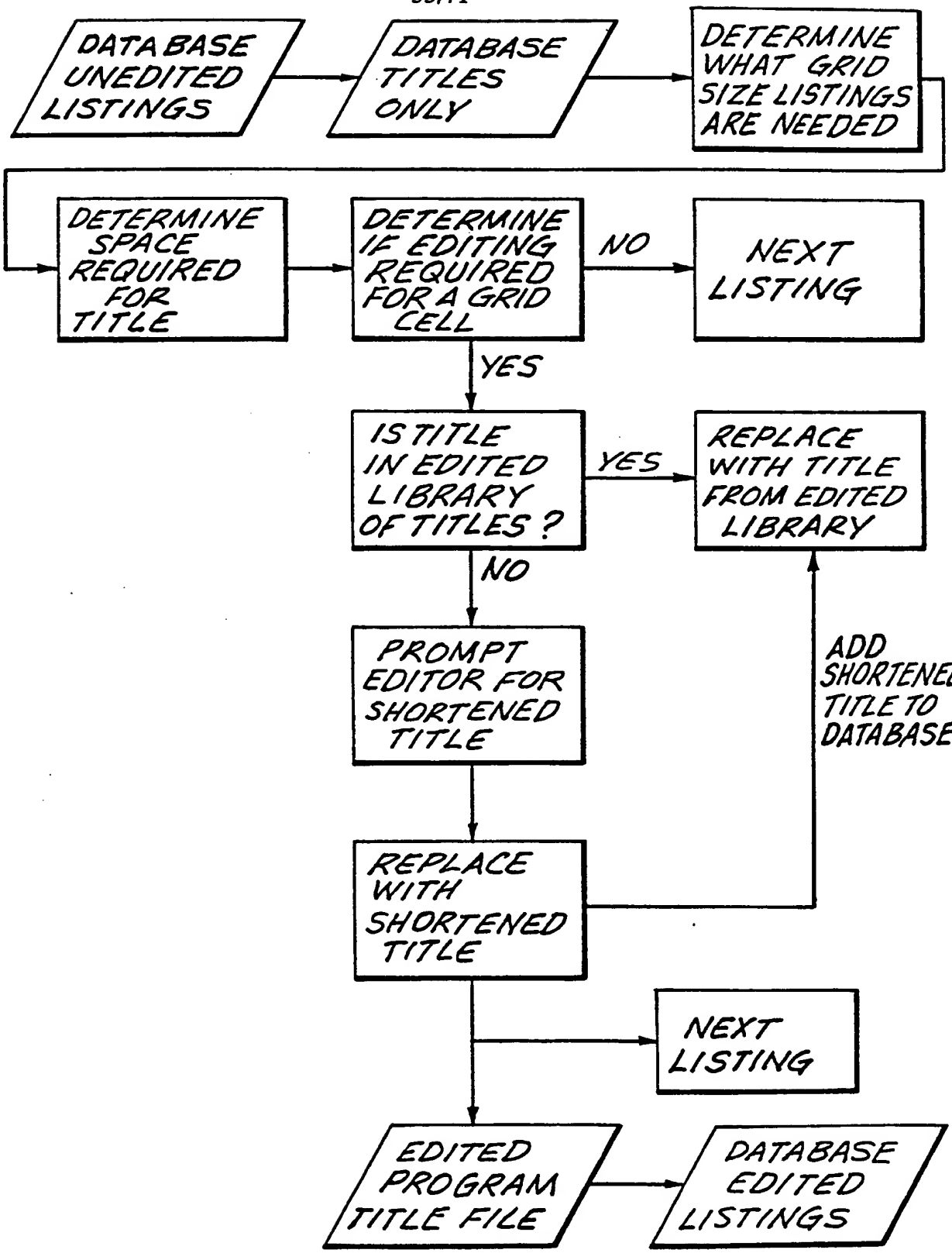
DATA BASE UNEDITED LISTINGS
DATABASE TITLES ONLY
DETERMINE WHAT GRID SIZE LISTINGS ARE NEEDED
DETERMINE SPACE REQUIRED FOR TITLE
DETERMINE IF EDITING REQUIRED FOR A GRID CELL
NO
NEXT LISTING
YES
IS TITLE IN EDITED LIBRARY OF TITLES ?
YES
REPLACE WITH TITLE FROM EDITED LIBRARY
NO
PROMPT EDITOR FOR SHORTENED TITLE
ADD SHORTENED TITLE TO DATABASE
REPLACE WITH SHORTENED TITLE
NEXT LISTING
EDITED PROGRAM TITLE FILE
DATABASE EDITED LISTINGS

FIG. 42

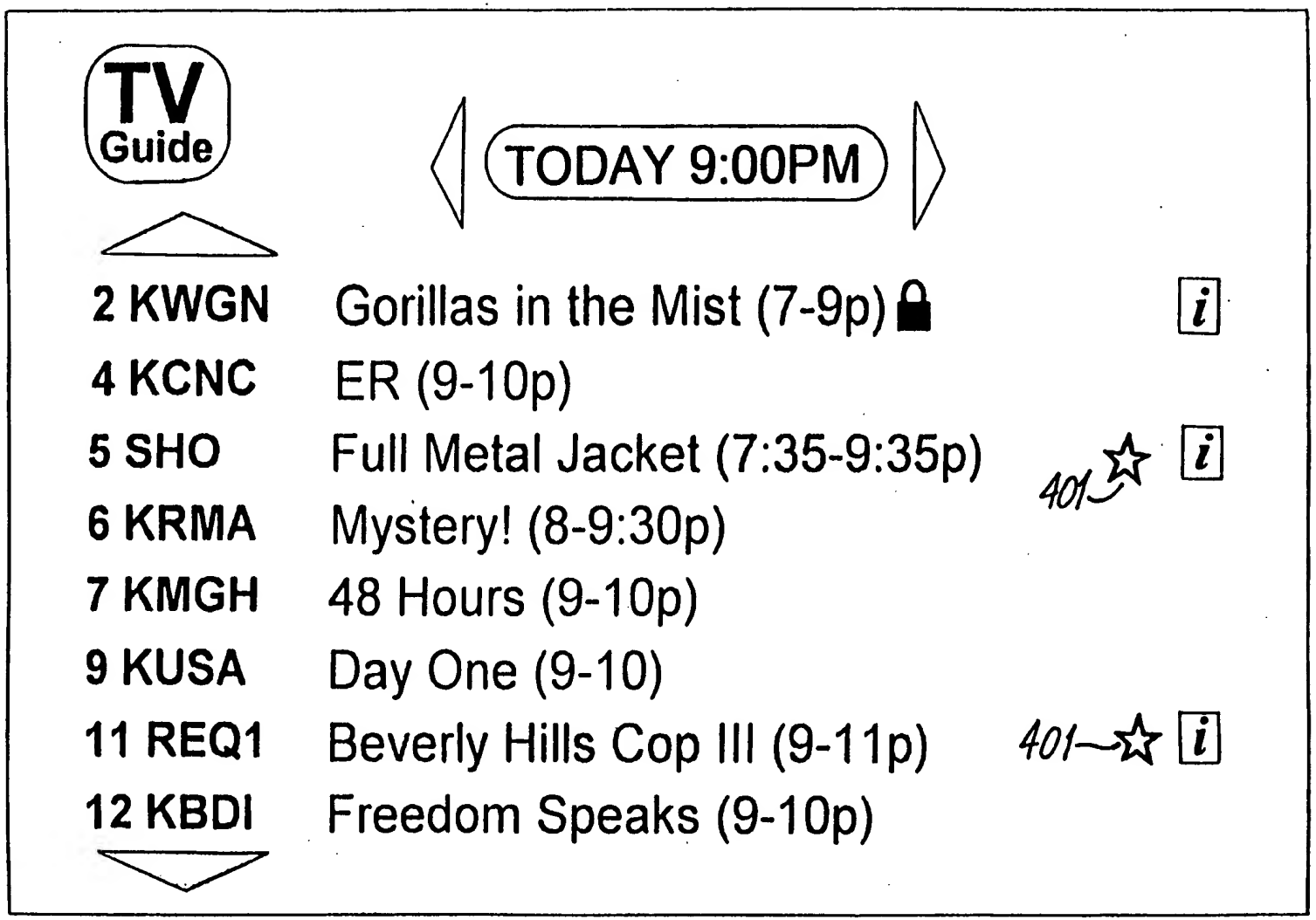
TV Guide
TODAY 9:00PM
2 KWGN Gorillas in the Mist (7-9p)
4 KCNC ER (9-10p)
5 SHO Full Metal Jacket (7:35-9:35p)
401
6 KRMA Mystery! (8-9:30p)
7 KMGH 48 Hours (9-10p)
9 KUSA Day One (9-10)
11 REQ1 Beverly Hills Cop III (9-11p)
401
12 KBDI Freedom Speaks (9-10p)

FIG.43A

| Full Metal Jacket | VHS | $29.95 |
|---|---|---|

To order a professionally produced video cassette of this program, select a format then press (OK)

Video tape Format: ◁ (VHS) ▷

FIG.43B

| Full Metal Jacket | VHS | UPS | $39.95 |
|---|---|---|---|

Please select the payment and shipment methods you would like to use for this order, then press (OK)

Payment Method: ◁ (Visa) ▷

Shipment Method: ◁ (Fed-X) ▷

Card #: [ ] Exp. Date: [ ]

FIG.43C

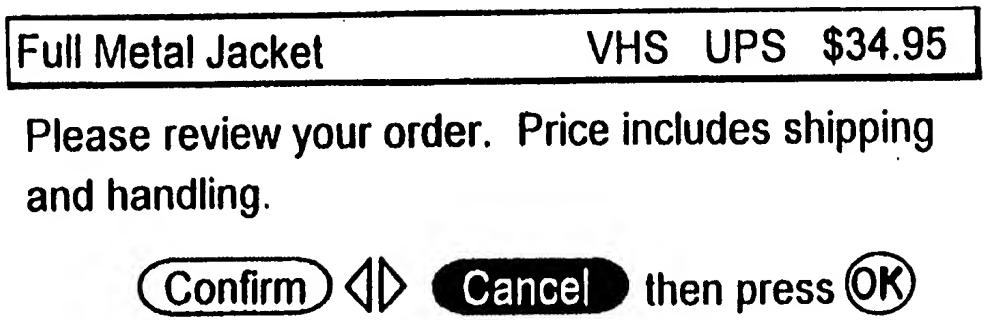


FIG.43D

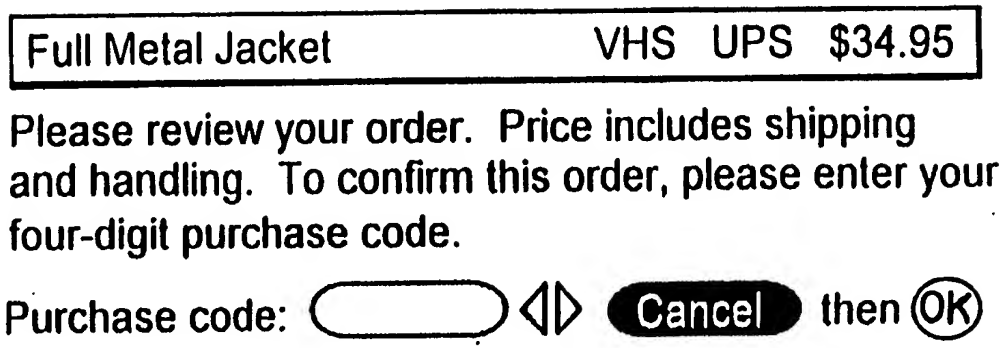


FIG.43E

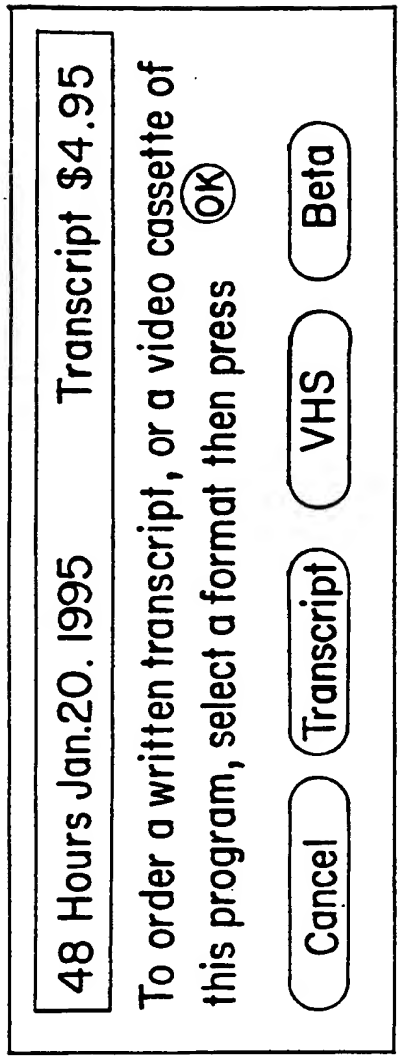
48 Hours Jan.20. 1995 Transcript $4.95
To order a written transcript, or a video cassette of this program, select a format then press OK
Cancel
Transcript
VHS
Beta

FIG. 44

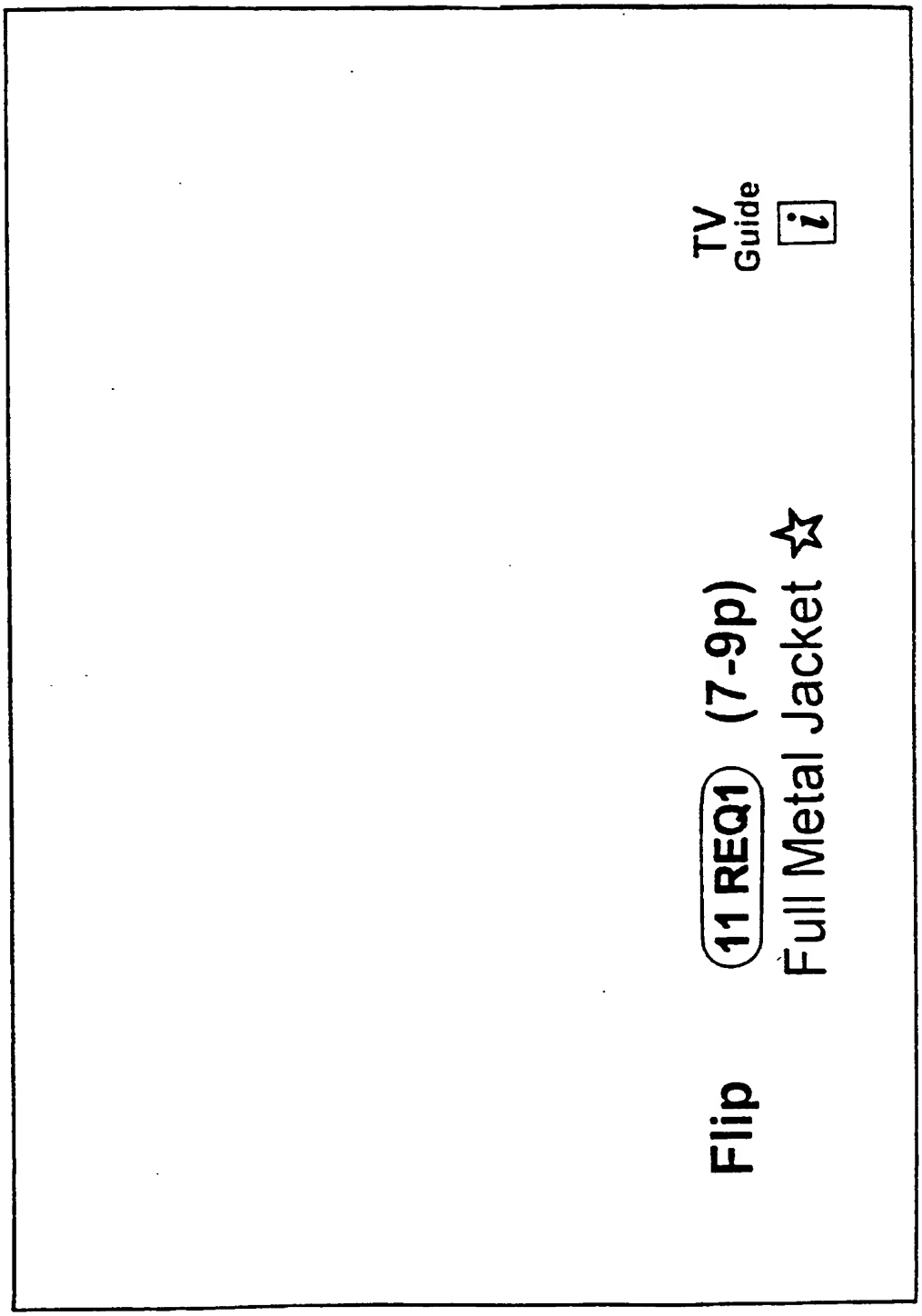


FIG.45

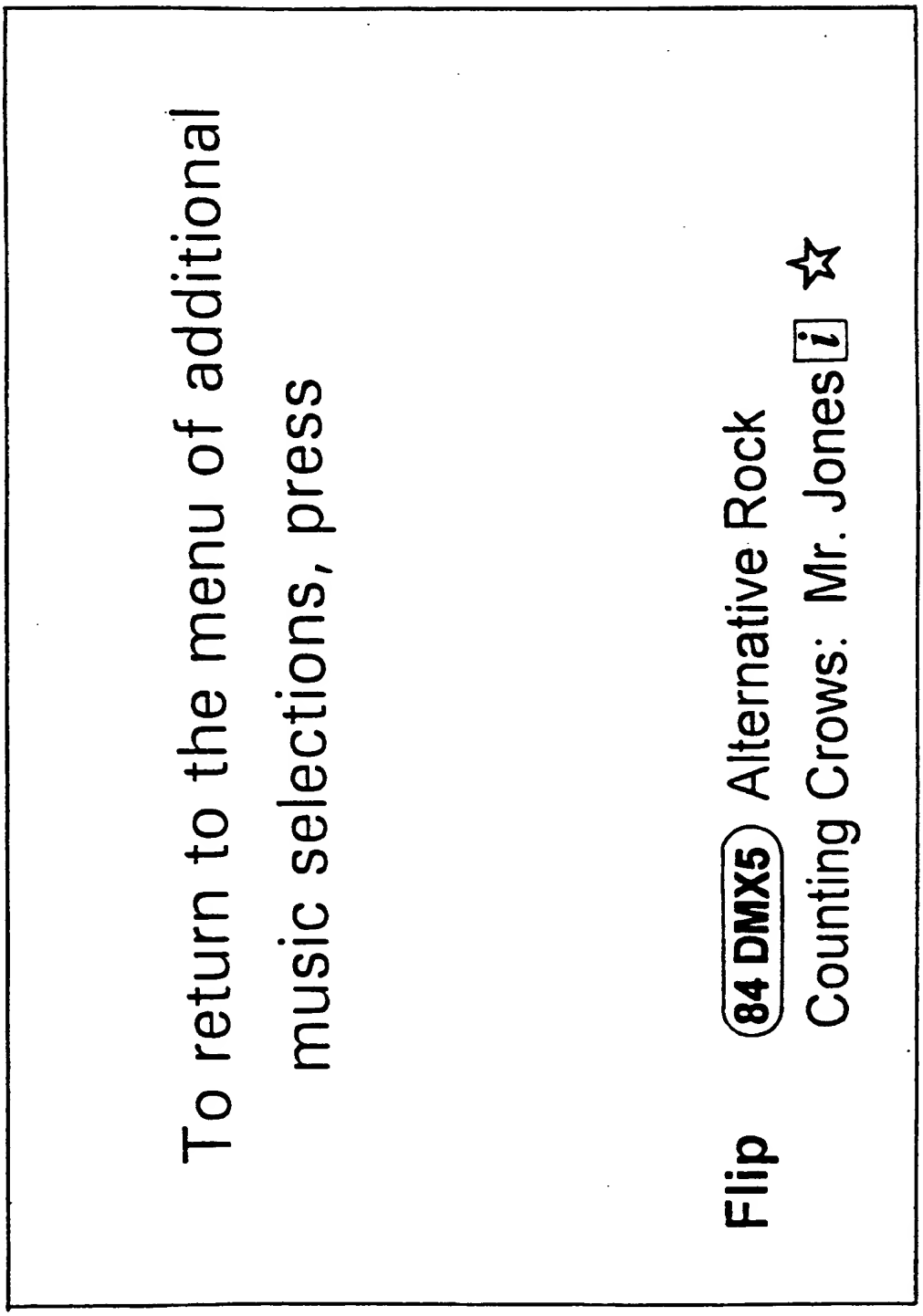
To return to the menu of additional music selections, press
Flip
84 DMX5
Alternative Rock
Counting Crows: Mr. Jones
i

FIG.46

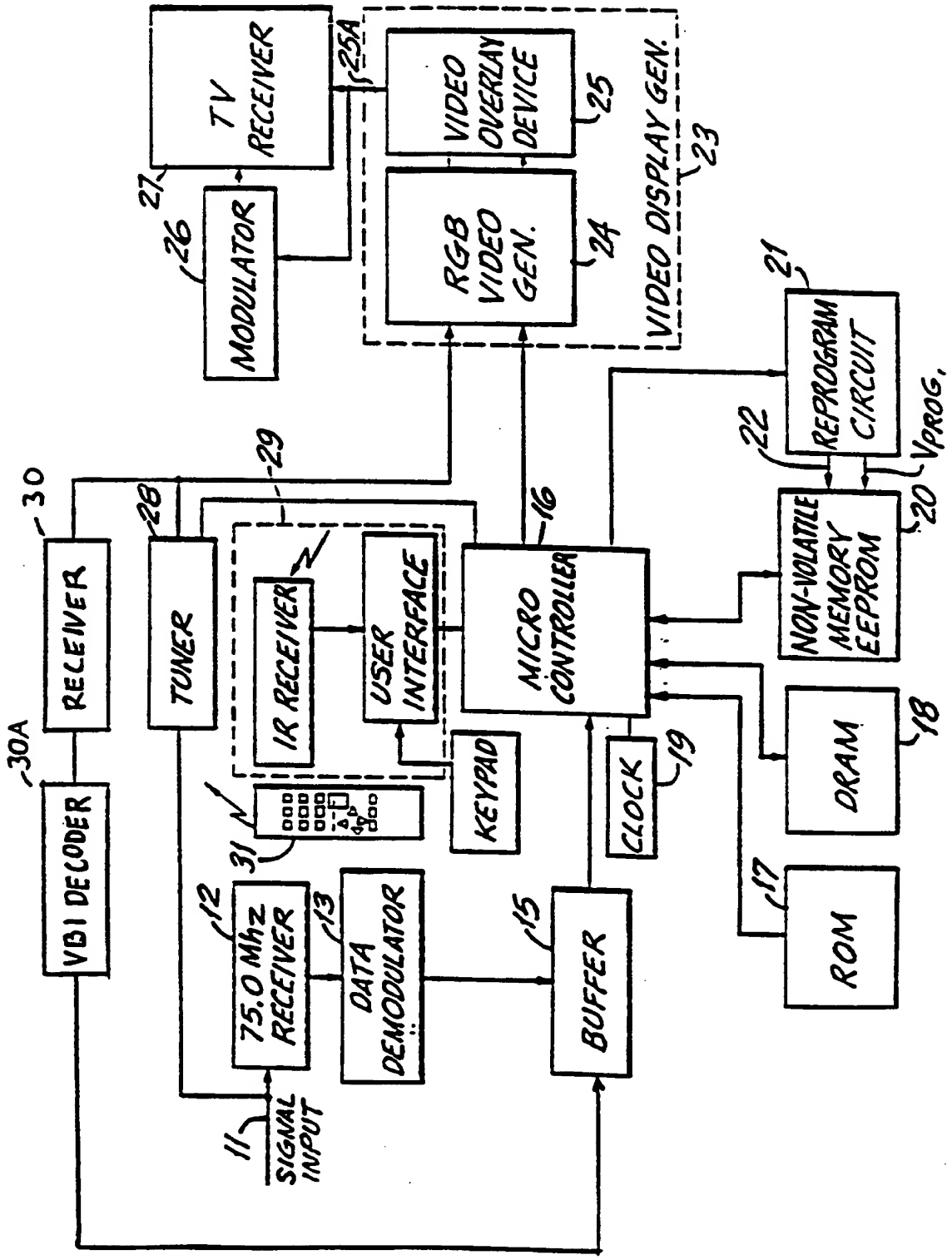
TV RECEIVER
25A
VIDEO OVERLAY DEVICE
25
VIDEO DISPLAY GEN.
23
RGB VIDEO GEN.
24
MODULATOR
26
27
21
REPROGRAM CIRCUIT
22
VPROG.
29
30
28
16
RECEIVER
TUNER
IR RECEIVER
USER INTERFACE
MICRO CONTROLLER
NON-VOLATILE MEMORY EEPROM
20
30A
VBI DECODER
KEYPAD
CLOCK
19
DRAM
18
31
12
75.0 Mhz RECEIVER
13
DATA DEMODULATOR
15
BUFFER
17
ROM
11
SIGNAL INPUT

FIG. 47

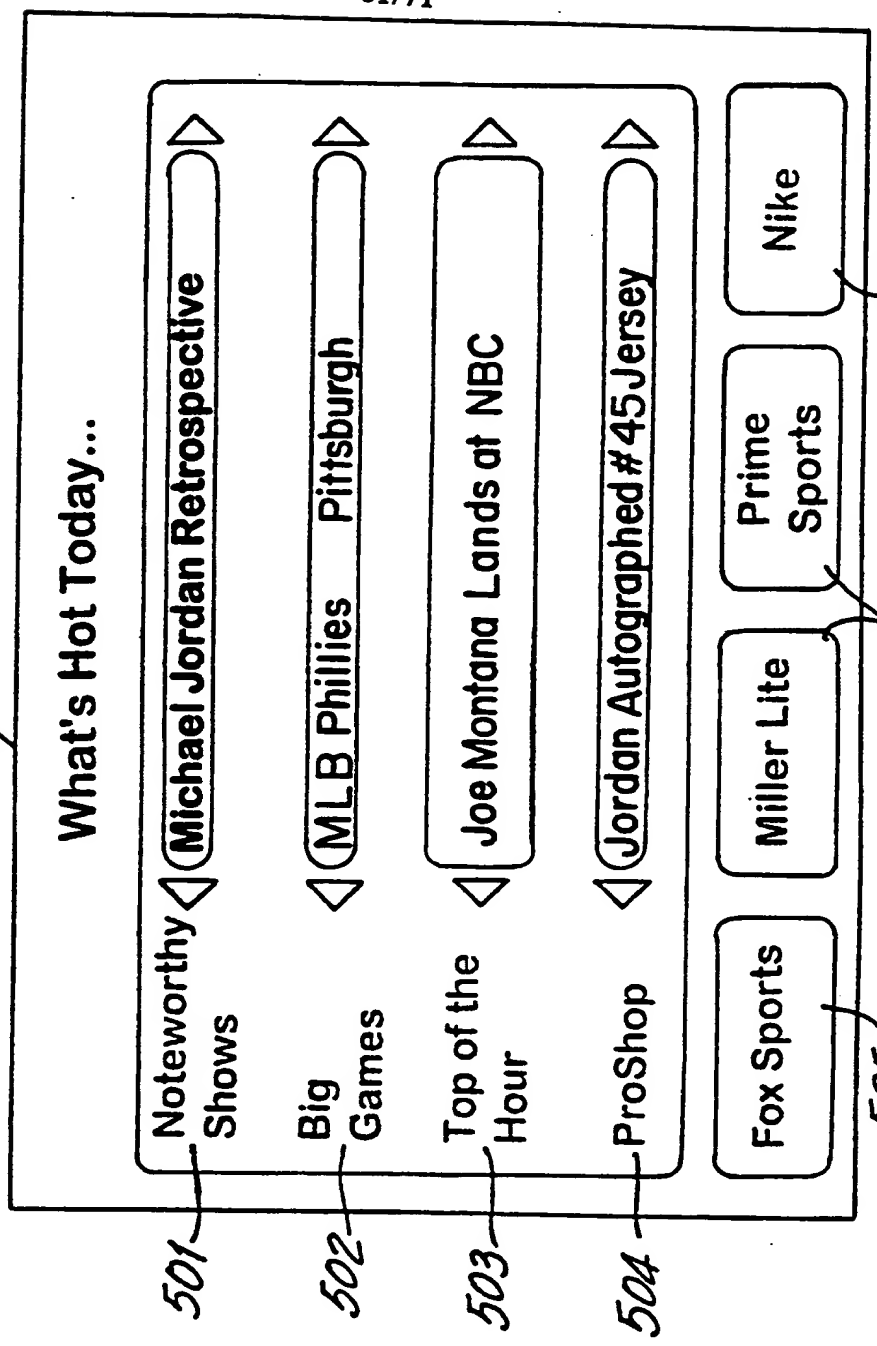
500
What's Hot Today...
Noteworthy Shows
Michael Jordan Retrospective
Big Games
MLB Phillies Pittsburgh
Top of the Hour
Joe Montana Lands at NBC
ProShop
Jordan Autographed #45 Jersey
Fox Sports
Miller Lite
Prime Sports
Nike
501
502
503
504
505
505
505

FIG.48

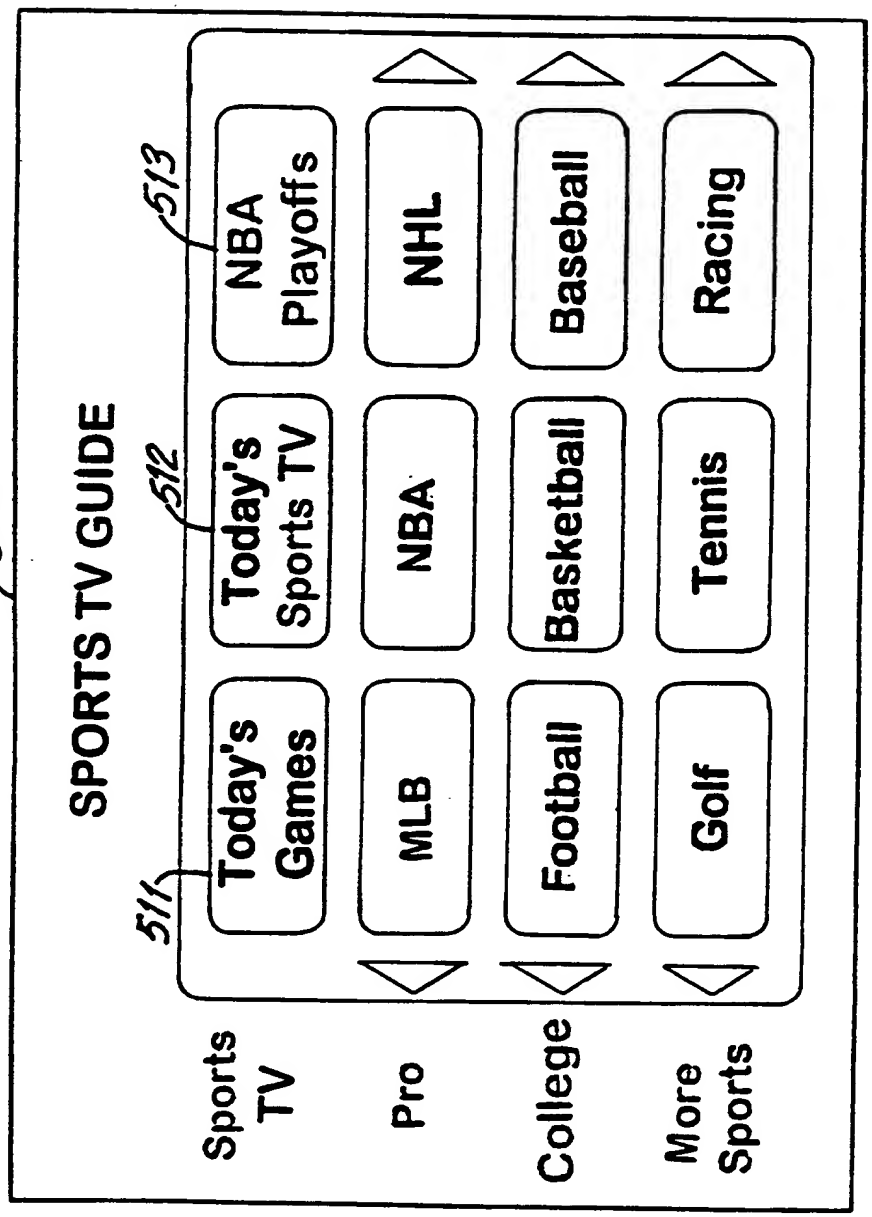
510
SPORTS TV GUIDE
511
Today's Games
MLB
Football
Golf
512
Today's Sports TV
NBA
Basketball
Tennis
513
NBA Playoffs
NHL
Baseball
Racing
Sports TV
Pro
College
More Sports

FIG.49

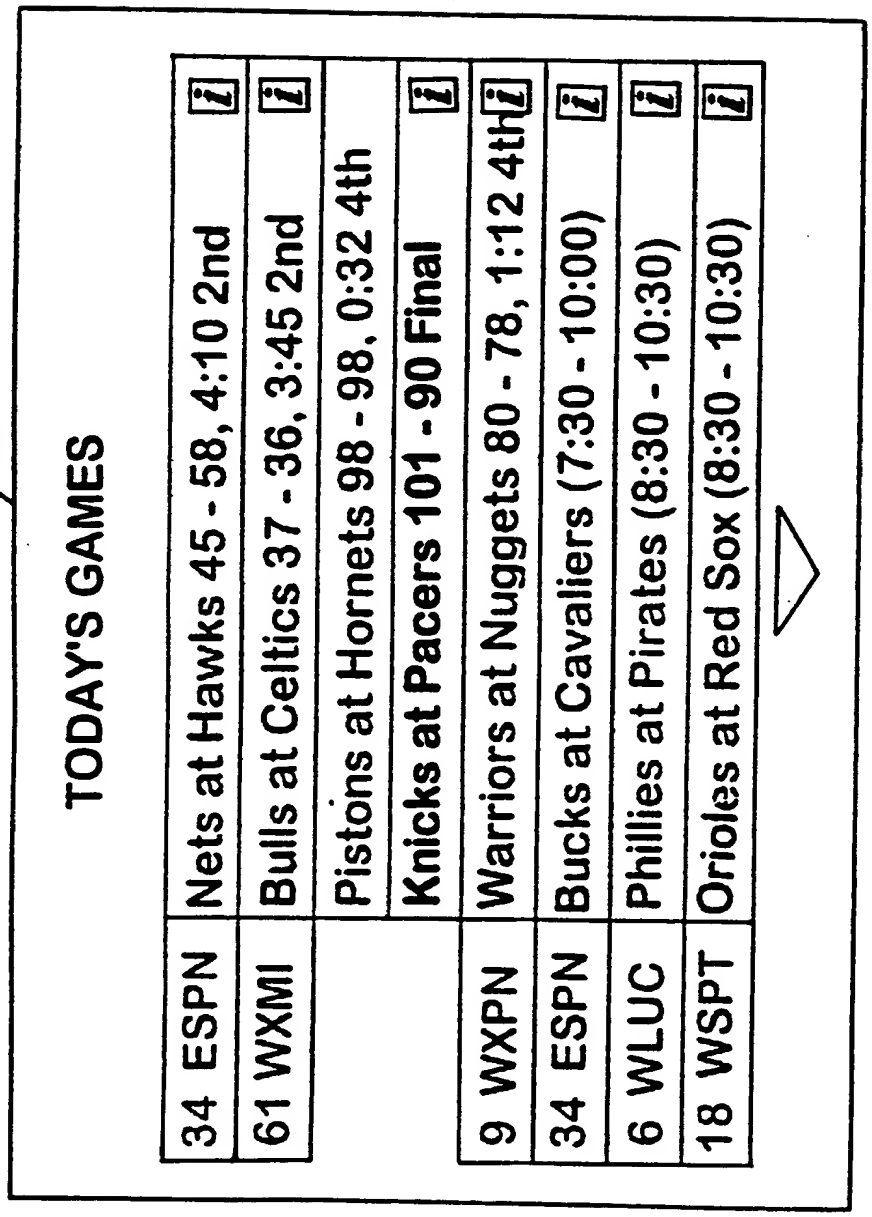
520
TODAY'S GAMES
34 ESPN
Nets at Hawks 45 - 58, 4:10 2nd
61 WXMI
Bulls at Celtics 37 - 36, 3:45 2nd
Pistons at Hornets 98 - 98, 0:32 4th
Knicks at Pacers 101 - 90 Final
9 WXPN
Warriors at Nuggets 80 - 78, 1:12 4th
34 ESPN
Bucks at Cavaliers (7:30 - 10:00)
6 WLUC
Phillies at Pirates (8:30 - 10:30)
18 WSPT
Orioles at Red Sox (8:30 - 10:30)

FIG.50

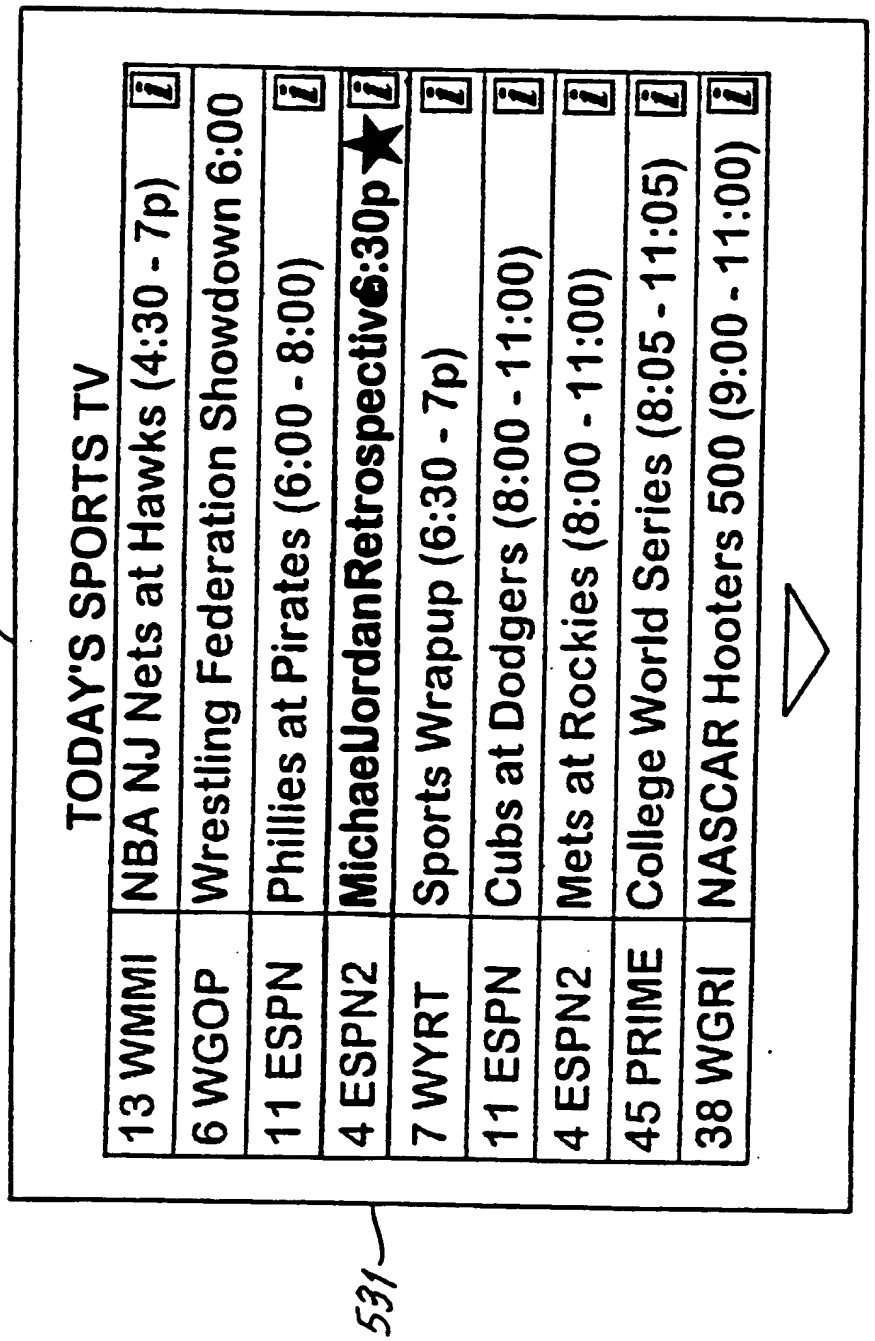
530
TODAY'S SPORTS TV
13 WMMI NBA NJ Nets at Hawks (4:30 - 7p)
6 WGOP Wrestling Federation Showdown 6:00
11 ESPN Phillies at Pirates (6:00 - 8:00)
4 ESPN2 MichaelJordanRetrospective6:30p
7 WYRT Sports Wrapup (6:30 - 7p)
11 ESPN Cubs at Dodgers (8:00 - 11:00)
4 ESPN2 Mets at Rockies (8:00 - 11:00)
45 PRIME College World Series (8:05 - 11:05)
38 WGRI NASCAR Hooters 500 (9:00 - 11:00)
531

FIG.5I

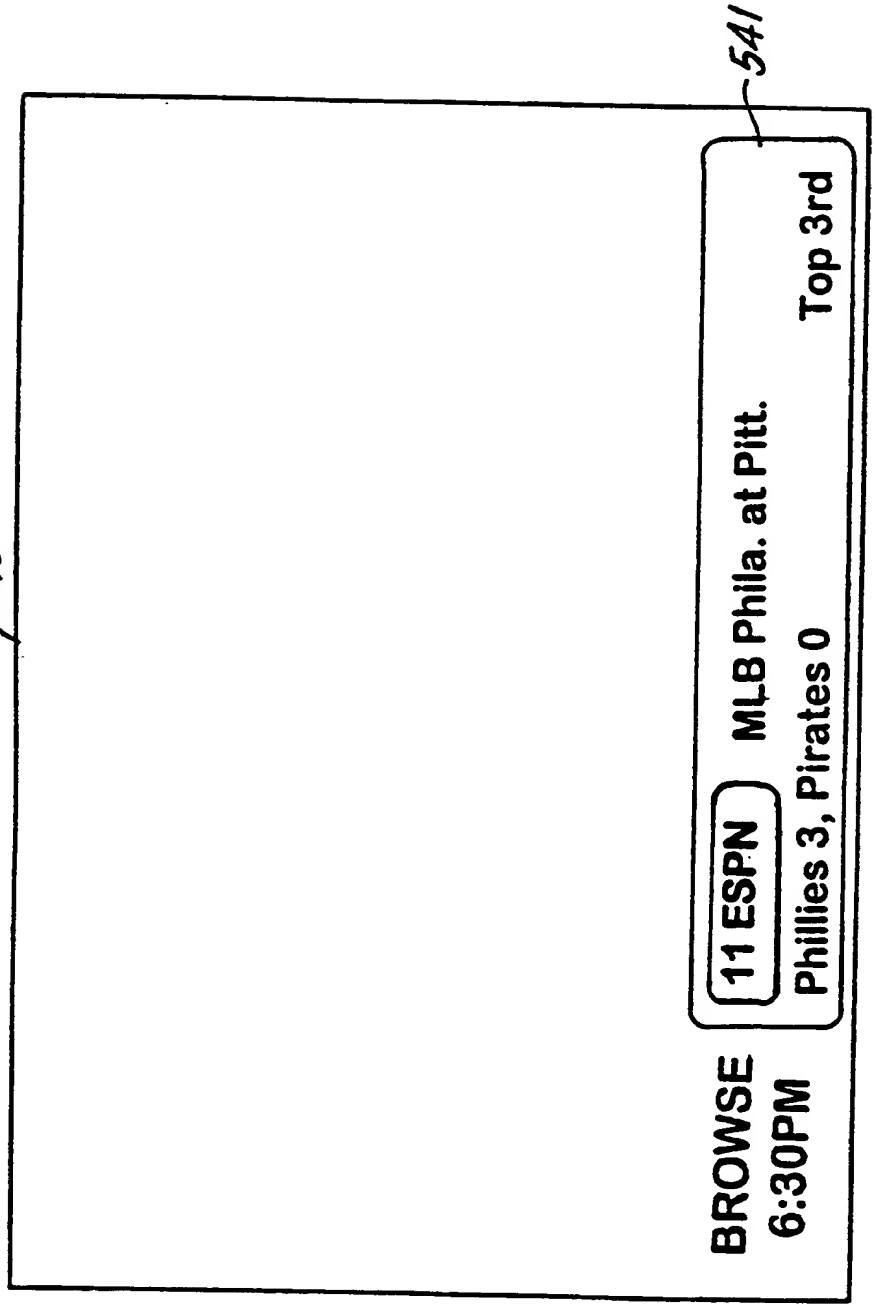
540
541
BROWSE
6:30PM
11 ESPN
MLB Phila. at Pitt.
Top 3rd
Phillies 3, Pirates 0

FIG.52

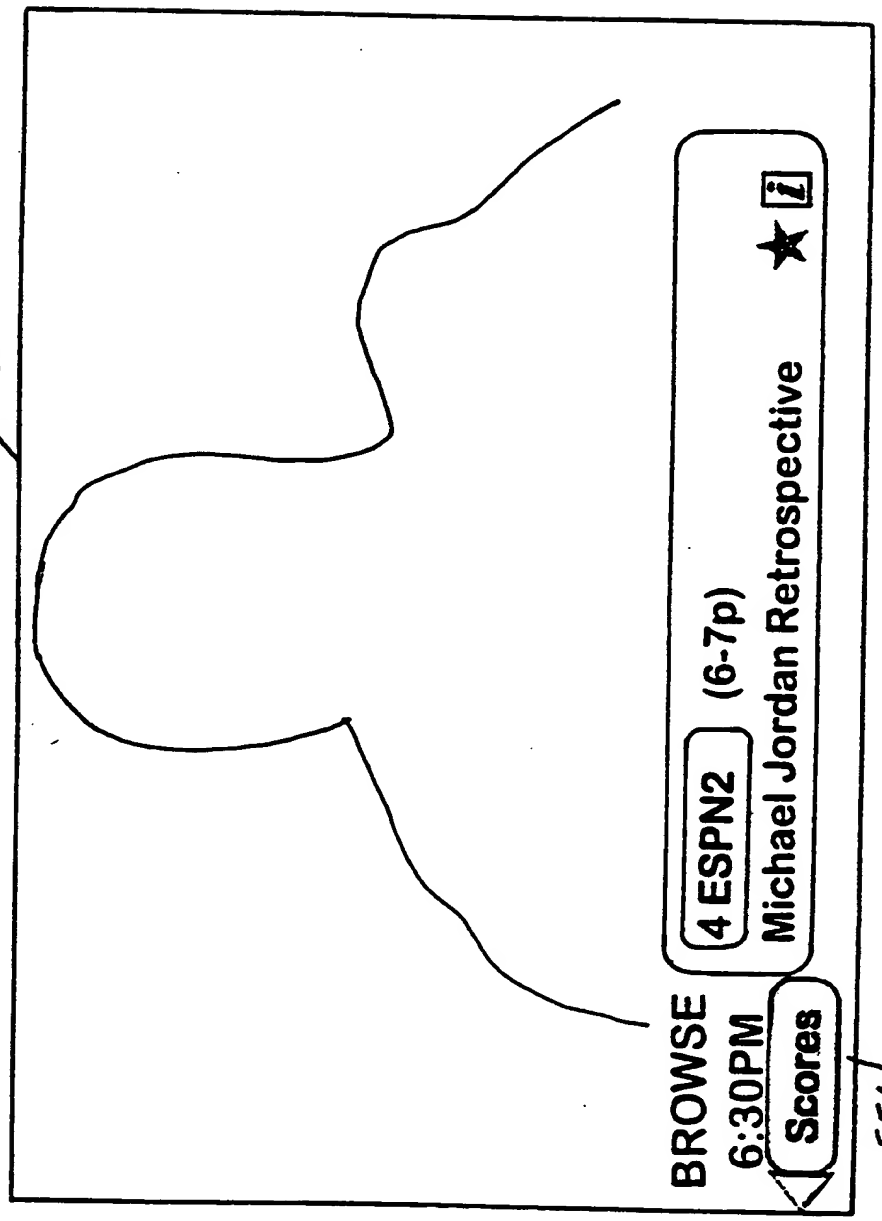
550
BROWSE
6:30PM
Scores
551
4 ESPN2
(6-7p)
Michael Jordan Retrospective

FIG.53

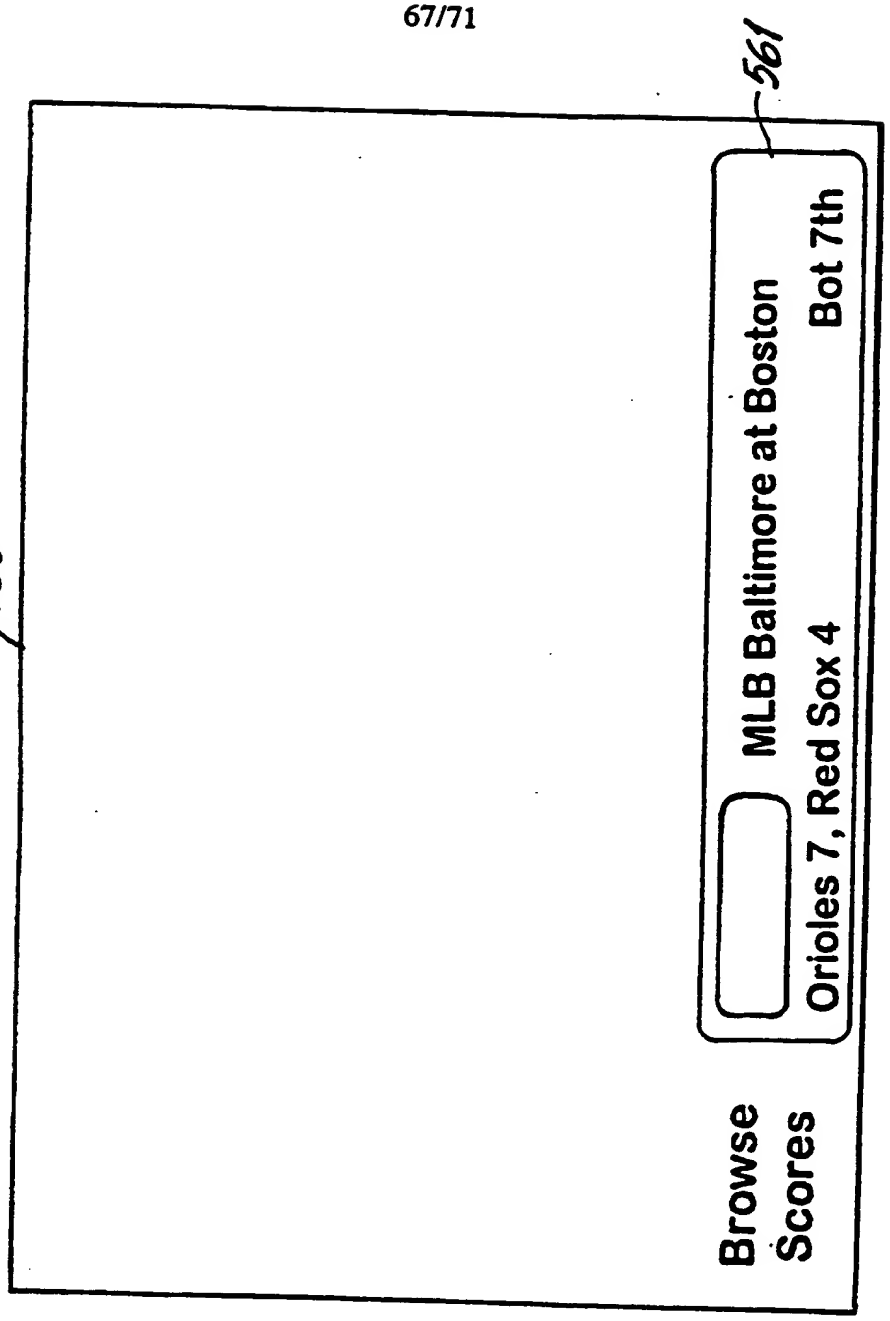
560
561
MLB Baltimore at Boston
Bot 7th
Orioles 7, Red Sox 4
Browse
Scores

FIG.54

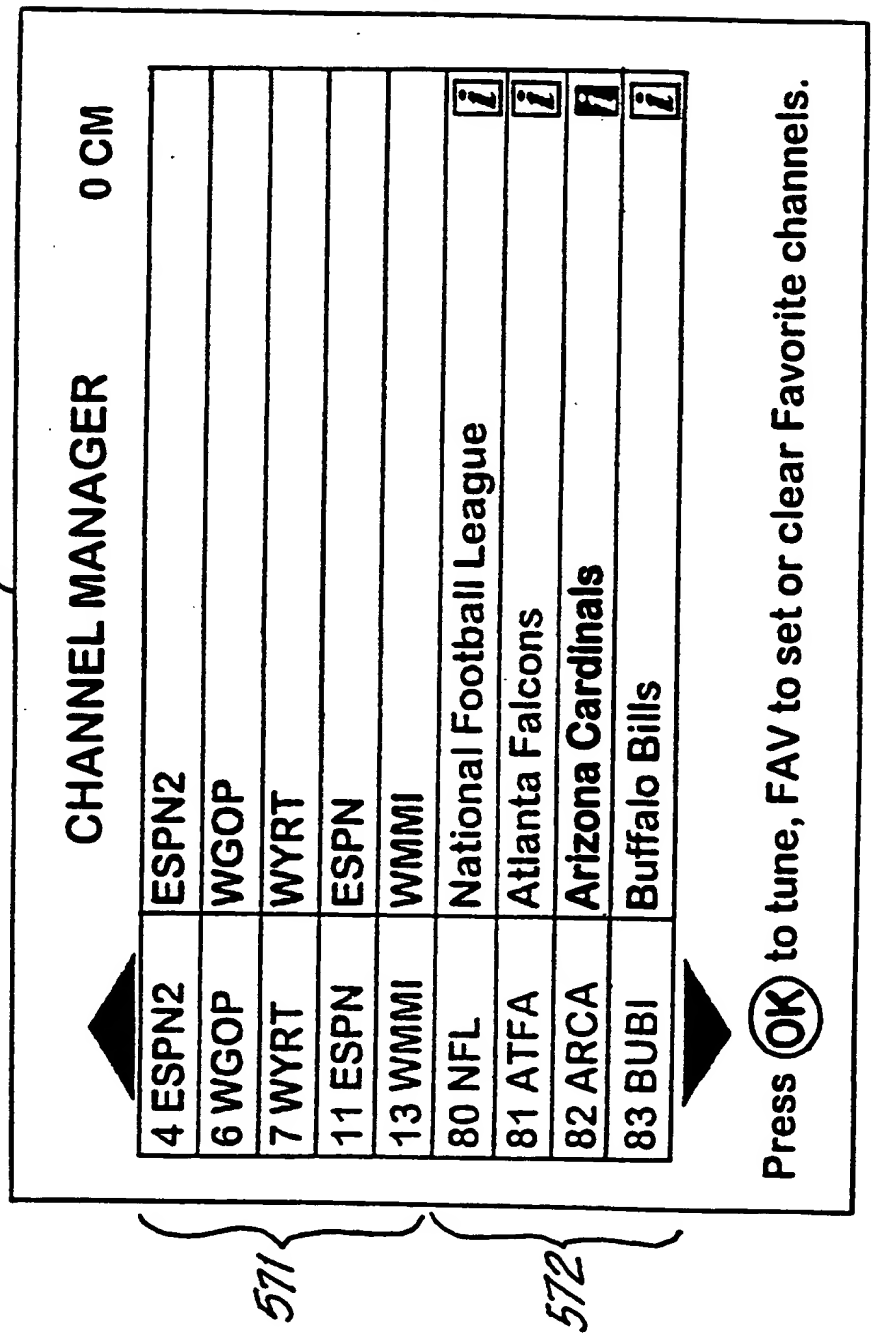
570
CHANNEL MANAGER
0 CM
4 ESPN2
6 WGOP
7 WYRT
11 ESPN
13 WMMI
80 NFL
81 ATFA
82 ARCA
83 BUBI
ESPN2
WGOP
WYRT
ESPN
WMMI
National Football League
Atlanta Falcons
Arizona Cardinals
Buffalo Bills
Press OK to tune, FAV to set or clear Favorite channels.
571
572

FIG.55

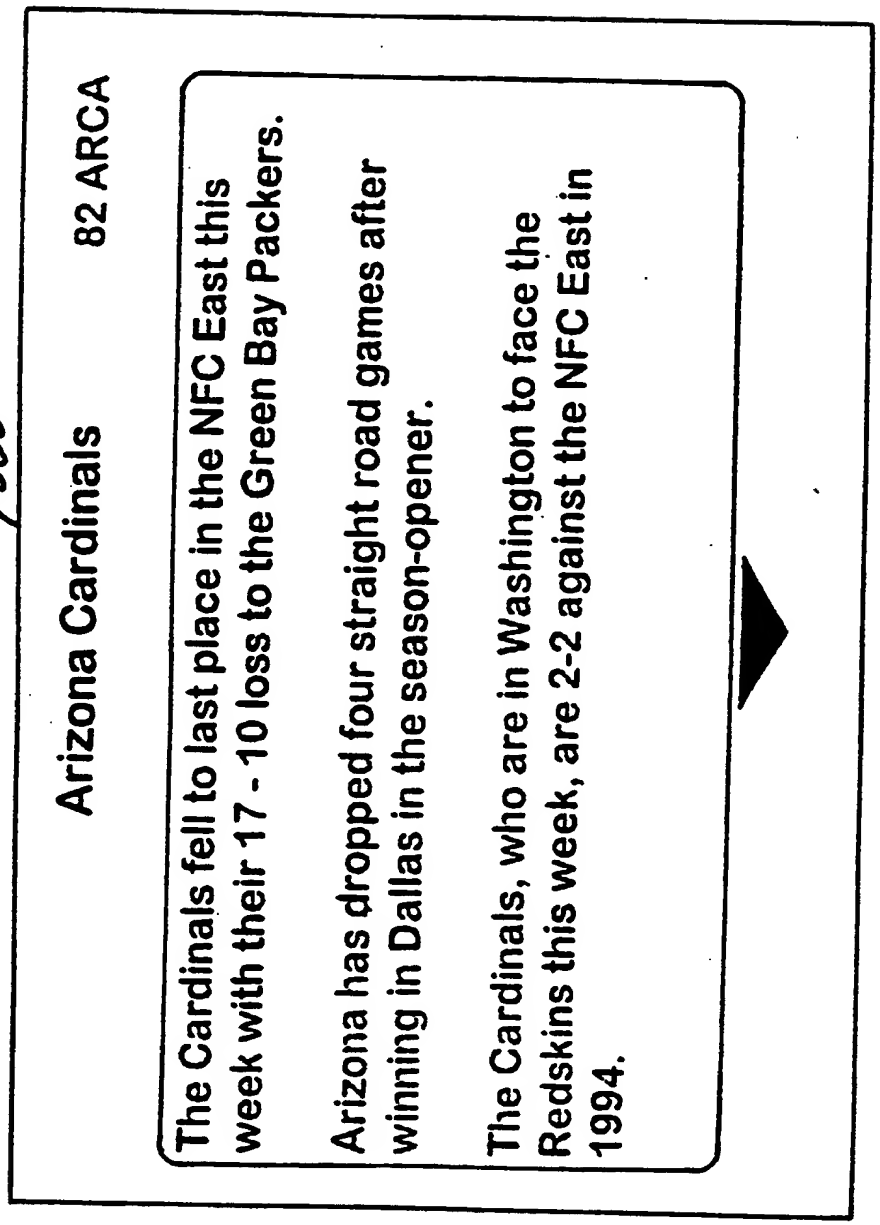
580
Arizona Cardinals
82 ARCA
The Cardinals fell to last place in the NFC East this week with their 17 - 10 loss to the Green Bay Packers.
Arizona has dropped four straight road games after winning in Dallas in the season-opener.
The Cardinals, who are in Washington to face the Redskins this week, are 2-2 against the NFC East in 1994.

FIG. 56

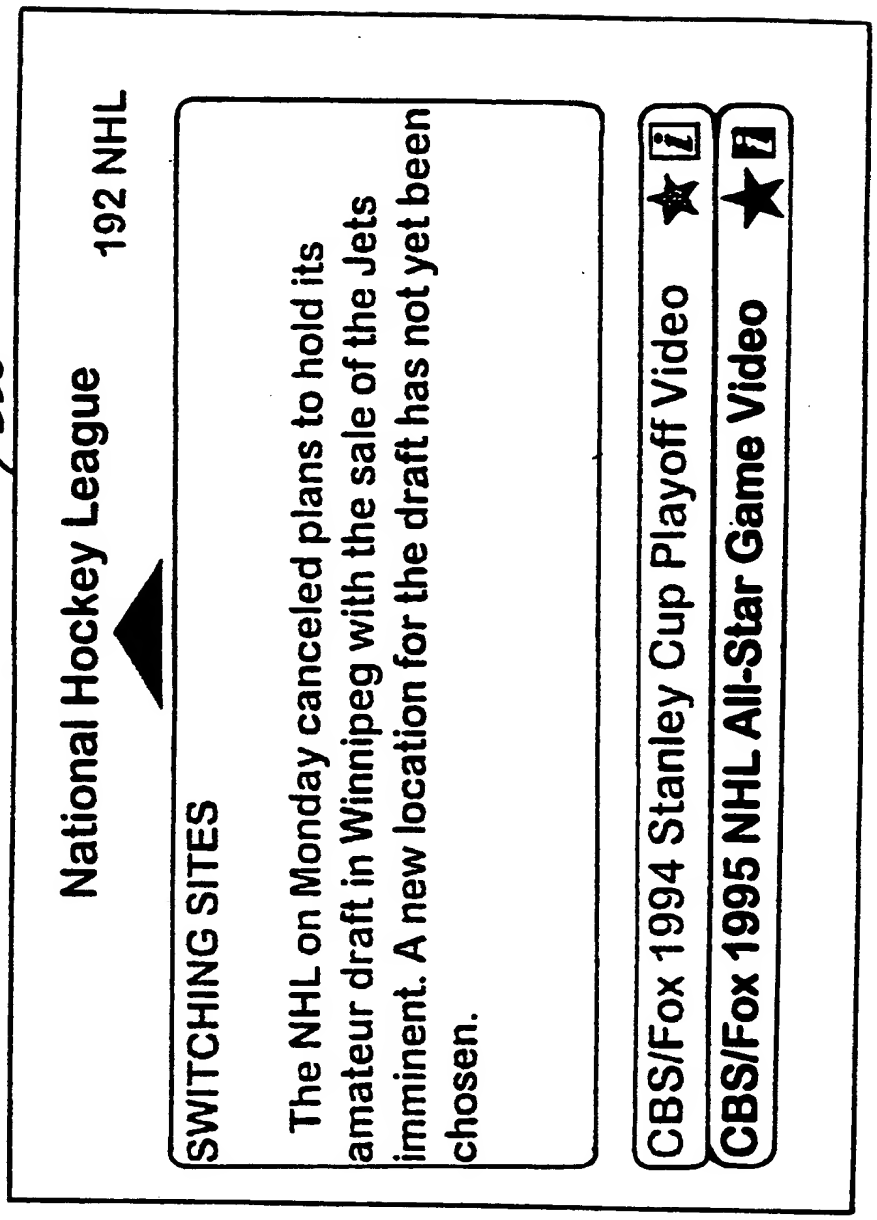
590
National Hockey League
192 NHL
SWITCHING SITES
The NHL on Monday canceled plans to hold its amateur draft in Winnipeg with the sale of the Jets imminent. A new location for the draft has not yet been chosen.
CBS/Fox 1994 Stanley Cup Playoff Video
CBS/Fox 1995 NHL All-Star Game Video

FIG.57

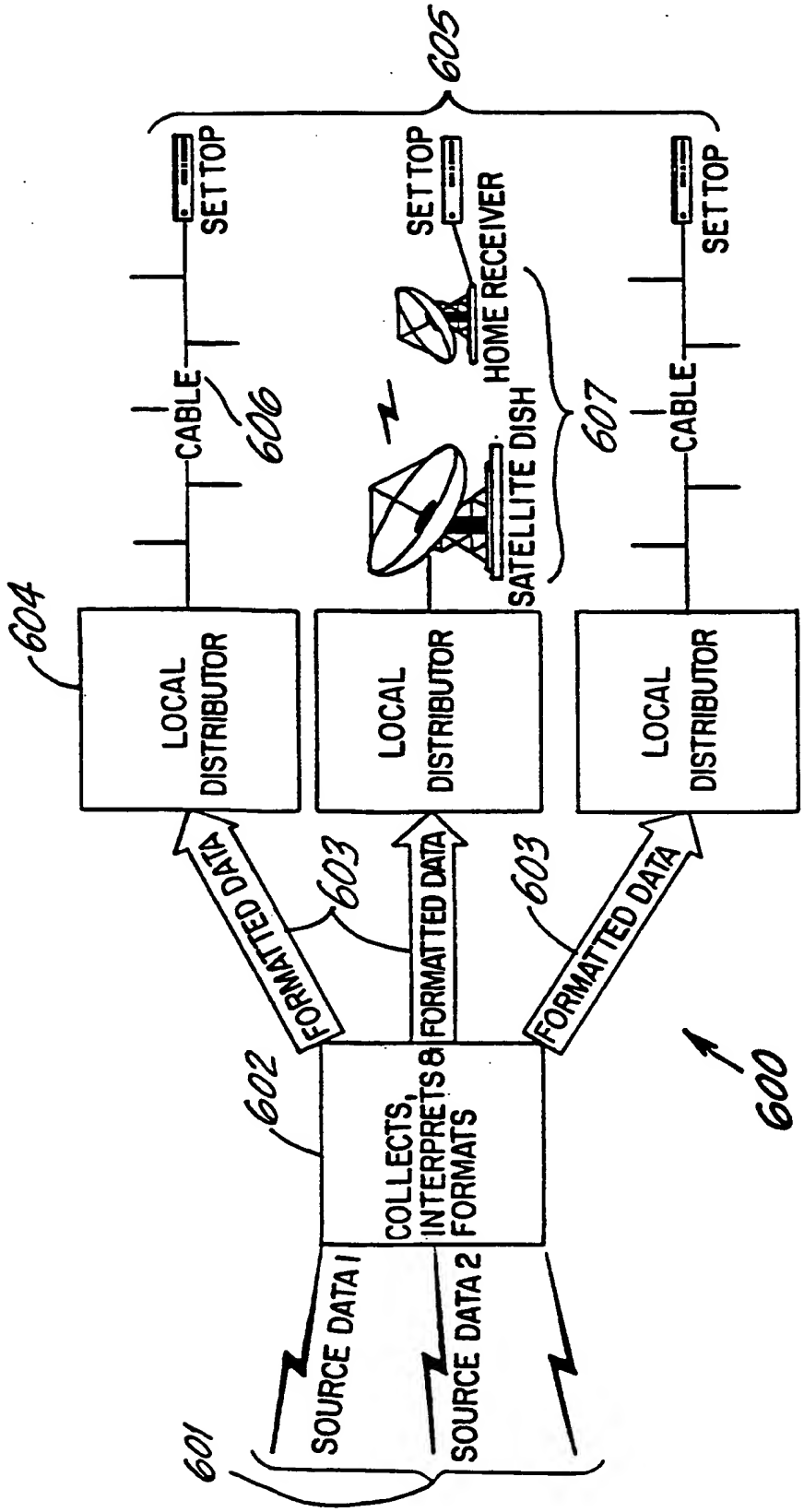
605
SET TOP
SET TOP
SET TOP
HOME RECEIVER
CABLE
606
CABLE
607
SATELLITE DISH
604
LOCAL DISTRIBUTOR
LOCAL DISTRIBUTOR
LOCAL DISTRIBUTOR
FORMATTED DATA
603
FORMATTED DATA
603
FORMATTED DATA
602
COLLECTS, INTERPRETS & FORMATS
600
SOURCE DATA 1
SOURCE DATA 2
601

FIG.58

# INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/US 96/09292

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04N7/173 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | WO,A,95 07003 (YUEN) 9 March 1995<br>see the whole document<br>--- | 1-5 |
| A | WO,A,94 14282 (DISCOVERY COMMUNICATIONS) 23 June 1994<br>see page 26, line 16 - page 28, line 18<br>see page 53, line 12 - line 17<br>see page 54, line 15 - page 55, line 7<br>see page 69, line 18 - page 86, line 16; figures 20A,20B<br>--- | 1-5 |
| A | WO,A,94 21085 (SCIENTIFIC-ATLANTA) 15 September 1994<br>see the whole document<br>--- | 5 |
| A | US,A,5 223 924 (STRUBBE) 29 June 1993<br>see the whole document<br>---<br>-/-- | 1 |

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 16 September 1996 | 26.09.96 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax (+31-70) 340-3016 | Yvonnet, J |

Form PCT/ISA/210 (second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

Inte nal Application No
PCT/US 96/09292

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | BRUGLIERA: "digital on-screen display, a new technology for the consumer interface" 10 June 1993 , 18TH INTERNATIONAL TELEVISION SYMPOSIUM AND TECHNICAL EXHIBITION , MONTREUX(CH) XP002013370 see page 580 - page 583 ----- | 1-4 |

1

# INTERNATIONAL SEARCH REPORT

information on patent family members

Inte nal Application No
PCT/US 96/09292

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date |
|---|---|---|---|---|
| WO-A-9507003 | 09-03-95 | AU-A- | 7718394 | 22-03-95 |
| WO-A-9414282 | 23-06-94 | AU-A- | 5732994 | 04-07-94 |
| | | AU-A- | 5733094 | 04-07-94 |
| | | AU-A- | 5733194 | 04-07-94 |
| | | AU-A- | 5733294 | 04-07-94 |
| | | AU-A- | 5736394 | 04-07-94 |
| | | AU-A- | 5845894 | 22-06-94 |
| | | AU-A- | 5869894 | 04-07-94 |
| | | CA-A- | 2151458 | 23-06-94 |
| | | CN-A- | 1093211 | 05-10-94 |
| | | CN-A- | 1090451 | 03-08-94 |
| | | CN-A- | 1090452 | 03-08-94 |
| | | CN-A- | 1096151 | 07-12-94 |
| | | CN-A- | 1090453 | 03-08-94 |
| | | CN-A- | 1090454 | 03-08-94 |
| | | EP-A- | 0673578 | 27-09-95 |
| | | EP-A- | 0673579 | 27-09-95 |
| | | EP-A- | 0673580 | 27-09-95 |
| | | EP-A- | 0673581 | 27-09-95 |
| | | EP-A- | 0673582 | 27-09-95 |
| | | EP-A- | 0673583 | 27-09-95 |
| | | EP-A- | 0674824 | 04-10-95 |
| | | JP-T- | 8506938 | 23-07-96 |
| | | JP-T- | 8506939 | 23-07-96 |
| | | JP-T- | 8506940 | 23-07-96 |
| | | JP-T- | 8506941 | 23-07-96 |
| | | JP-T- | 8506942 | 23-07-96 |
| | | WO-A- | 9413107 | 09-06-94 |
| | | WO-A- | 9414279 | 23-06-94 |
| | | WO-A- | 9414280 | 23-06-94 |
| | | WO-A- | 9414281 | 23-06-94 |
| | | WO-A- | 9414283 | 23-06-94 |
| | | WO-A- | 9414284 | 23-06-94 |
| WO-A-9421085 | 15-09-94 | US-A- | 5359601 | 25-10-94 |
| | | AU-A- | 6359994 | 26-09-94 |
| | | EP-A- | 0688490 | 27-12-95 |
| | | JP-T- | 8507666 | 13-08-96 |
| | | US-A- | 5418782 | 23-05-95 |

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Information on patent family members

Int onal Application No
PCT/US 96/09292

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date |
|---|---|---|---|---|
| US-A-5223924 | 29-06-93 | EP-A- | 0572090 | 01-12-93 |
| | | JP-A- | 6197342 | 15-07-94 |
| | | US-A- | 5469206 | 21-11-95 |
| | | US-A- | 5483278 | 09-01-96 |

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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04N 7/00, 7/10

A1

(11) International Publication Number: **WO 97/48230**

(43) International Publication Date: 18 December 1997 (18.12.97)

(21) International Application Number: PCT/US97/09488

(22) International Filing Date: 2 June 1997 (02.06.97)

(30) Priority Data:
60/019,684 13 June 1996 (13.06.96) US

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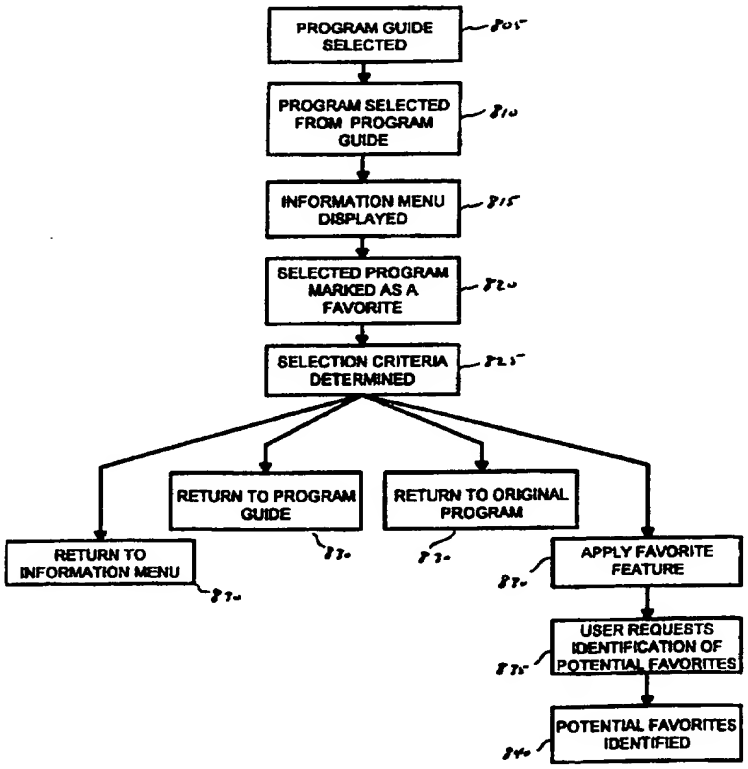
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

**Published**
*With international search report.*

(54) Title: METHOD AND APPARATUS FOR SEARCHING A GUIDE USING PROGRAM CHARACTERISTICS

(57) Abstract

System and method for obtaining information from an electronic program guide, which allows the user to identify interested programs without searching through the entire program guide, can be provided by a television system (30), a set-top box (420), a VCR (34), or a computer (12). In one embodiment, after the user identifies a favorite program, the system asks the user a series of questions to identify the particular characteristics of the interested program, then the system identifies all programs which contain the desired characteristics. In another embodiment, whenever the user watches a program the interactive system, operating in the background, searches for and marks all programs which may be of interest to the user. In another embodiment, the user directs the interactive system to search for programs containing desirable characteristics by entering certain attributes into the system. The system then identifies programs within the available electronic program guide which meets the user's requirements.



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# METHOD AND APPARATUS FOR SEARCHING A GUIDE USING PROGRAM CHARACTERISTICS

## CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority from provisional application Serial No. 60/019,684, filed June 13, 1996.

## BACKGROUND OF THE INVENTION

The present invention relates generally to a program schedule guide and, more particularly, to a system and process for allowing a television viewer to access on-screen television program listings and other information services in an easy and convenient way.

The number of television channels available to the user has grown dramatically within the last decade, primarily due to the availability of cable and direct broadcast satellite systems. As the number of programs of potential interest to the viewer has increased, a variety of electronic program guides have been developed to help the viewer select programs of particular interest. For example, commonly assigned U.S. Patent Nos. B1 4,706,121 and 5,353,121 each describe schedule information processing systems which provide the viewer with a convenient way to select programs based on viewer supplied selection criteria.

The system disclosed in U.S. Patent No. B1 4,706,121 (Young) receives television schedule information as a broadcast. In one embodiment of Young, the television schedule information is provided on the user's television screen. The user can then supply selection criteria which are utilized by the Young system to make program selections, to control the television schedule information displayed on the television screen, etc. In addition, Young discloses a system which controls a television receiver to allow for the automatic user selection of programs and the automatic, unattended recording of programs that are listed in the television schedule information. The automatic, unattended

recording of programs is achieved by controlling a video tape recorder (VCR) or other recording device. Young also proposes utilizing a personal computer for the television schedule information.

From the foregoing, it is apparent that improved methods of manipulating the information contained in electronic program guides are desired.

## SUMMARY OF THE INVENTION

The present invention provides an interactive system for obtaining information from an electronic program guide. The electronic program guide can be provided by a television system, a set-top box, a VCR, or a computer system. The interactive system allows the user to quickly identify programs which may be of particular interest, thereby avoiding the necessity of searching through the entire program guide.

In one embodiment of the invention, a user identifies a specific program as a favorite. The system then asks the user a series of questions in order to identify the particular characteristics of the specific program which makes the program a favorite. Based upon the user's responses, the system identifies other programs which contain the desired characteristics. The system can be designed to identify desirable programs upon request by the user; automatically utilizing the current program guide data; or automatically utilizing the program guide data, continuously updating the search as the program guide is updated.

In another embodiment of the invention, whenever the user watches a program the interactive system, operating in the background, searches for programs which appear similar to the program currently being watched. If additional programs are found which may be of interest, the system identifies the user by placing a small icon on the screen. In an alternate configuration, if the system identifies additional programs an icon is placed on one of the program guide information screens. Then when the user enters the program guide mode, a quick glance at the screen alerts the user to the possibility of viewing other programs which may be of interest. In

another configuration, the system does not present an icon to the user. Instead, one of the categories in the menu guide is FAVORITES. When the FAVORITES category is selected, the system identifies all programs which it previously determined to be of possible interest to the user.

In another embodiment, the user can utilize the interactive system of the invention to find desirable shows. In this embodiment, the user enters certain attributes into the system, for example, particular actors or directors. The system then identifies all programs within the electronic program guide which may meet the user's requirements.

A further understanding of the nature and advantages of the present invention may be realized by reference to the remaining portions of the specification and the drawings.

NOTE: Many of the names in the figures and/or specification may be the trademarks/servicemarks of others. Such names include "IBM," "MACINTOSH," "HBO," "SHO," "PBS," "M.A.S.H.," "I LOVE LUCY," "PRODIGY," "AMERICA ONLINE," "COMPUSERVE," "MSN," "AT&T," "49ER'S," "CASABLANCA," "GIANT'S BASEBALL," "LOUISVILLE SLUGGER," "NIKE," "NIKE SPIKED," "POP WARNER," "LEGENDS OF THE FALL," "SILENCE OF THE LAMBS," "THE TONIGHT SHOW," "NFL," "SEINFELD," "DR. DOOLITTLE," "DR. ZHIVAGO," "DR. JEKYLL AND MR. HYDE," and "DR. STRANGELOVE."

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 illustrates a computer system coupled to a television system;

Fig. 2 shows an example of a television schedule guide as displayed on a computer screen along with a user input device;

Fig. 3 illustrates a computer accessory for the computer system;

Fig. 4 illustrates a recording device connector for the television system;

Fig. 5 illustrates a process flow chart for the installation procedure;

Fig. 6 illustrates a process flow chart for the operation of the schedule/control system herein;

Fig. 7 illustrates several arrangements for providing television schedule information from a database to a television for display;

Fig. 8 illustrates the preferred procedure for utilizing the FAVORITE characteristics aspect of the invention;

Fig. 9 is an illustration of a menu according to one embodiment of the invention;

Fig. 10 is an illustration of a sub-menu which is displayed when the user selects FAVORITES from the main menu in one embodiment of the invention;

Fig. 11 is an illustration of an alpha-numeric character set displayed on a screen which allows a user to input specific names or dates into the system; and

Fig. 12 illustrates the procedure utilized in an alternate embodiment of the invention.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention provides an interactive computer system which assists a user in utilizing television schedule information. In the preferred embodiment, the user can (1) display television schedule information in a desired format on the computer or television screen, (2) select a desired program which is listed in the television schedule information for automatic tuning, and (3) select one or more desired programs which are listed in the television schedule information for automatic, unattended recording. To provide this functionality in the preferred embodiment, the present invention includes a computer system and a television system.

Fig. 1 illustrates a computer system coupled to a television system. In the preferred embodiment, computer system 10 includes standard computer 12 which is, for example, any available personal computer (e.g., IBM compatible, Macintosh, and the like). Computer 12 can also be located within a set-top box (e.g., a DSS box). Computer 12 contains hard drive 14 and processor 16. These units 14 and 16 are usually, automatically included in computer 12. Depending upon the amount of memory required as well as the desired

system configuration, hard drive 14 may be replaced with one or more memory chips. Disk input 18 is used to provide computer 12 with various, additional software. User input 20 allows a user to interact with computer 12 and/or the television schedule guide. Line 23 is connected to an available serial, parallel or other data port 23 on computer 12. This line 23 is used to connect other devices/components to computer 12.

Television system 30 includes television 32 which may be any commercially available television. Television system 30 may or may not include a video tape recorder (VCR). In this embodiment, VCRs 34 and 36 are coupled to television 32. These VCRs 34 and 36 can be, for example, any commercially available VCRs or any other type of recording device (analog or digital). User interface device 40 allows a user to interact with, for example, television 32, VCR 34, and/or VCR 36. User interface device 40 can be, for example, a remote control or a voice activated interface. Line 37 is used to connect other devices to VCR 34. Other devices can also be connected in series between VCR 34 and television 32 via line 38. Computer 12 (or computer system 10) and television 32 (or television system 30) can be located in different rooms within a private residence or a commercial building.

In the preferred embodiment, a computer program provided on diskettes, a CD ROM or other medium contains the software needed for receiving, organizing and displaying data for the television schedule guide. These diskettes are inserted in disk input 18 and the software for these diskettes is stored within computer 12 on hard drive 14 or on another mass storage location. This action can be performed by, for example, the user or a serviceperson. The computer program can also be provided, for example, via downloading from a satellite 24, transmission through the internet or other on-line service, or transmission through another type of land line 22 (e.g., coax cable, telephone line, optical fiber, or the like).

In addition to the computer program, data for the basic schedule information and other related data (e.g., data relating to a particular show) are needed for the generation and maintenance of the television schedule guide. These data are received, in the preferred embodiment, via line 22; they can also be provided via a satellite broadcast from satellite 24. Additionally, the television schedule information and related data can be sent directly to television 32 via satellite 24. In this arrangement, the television schedule information and related data does not have to be transmitted from computer system 10 to television system 30.

In the preferred embodiment, line 22 is a telephone line which provides access to the internet or other on-line service via, for example, a regular modem or direct modem access to a schedule provider. The schedule data are then provided via the internet or other on-line service, or directly from the service provider. As stated above, line 22 can also be, for example, coax cable, optical fiber or any other land line which can provide data to computer 12. The software program saved on hard drive 14 then utilizes the data received on line 22 to generate a television schedule guide. The user can retrieve this generated television schedule guide when desired.

Fig. 2 shows an example of a television schedule guide as displayed on a computer screen along with a user input device. In the preferred embodiment, the television schedule information is provided in a grid-like display. In this example, various channels are provided on the Y-axis of the grid guide, and various times are provided on the X-axis of the grid guide. This display can also contain special instructions for the user in screen area 52 and advertisements directed to the user in screen area 54. The television schedule guide in Fig. 2 has been customized by a user such that only channels 2, 3, 4, 5, 7, HBO, SHO and PBS are included in the displayed guide. In one embodiment, a television within computer system 10 or television system 30 can be used as computer screen 50.

The user, via input device 60, can scroll throughout the television schedule information provided in the grid guide. User input device 60 can be, for example, a keyboard with arrow keys, a computer pointing device (e.g., a mouse) or a voice recognition input. By utilizing user input device 60, a user can sort, mix, and do a special customized line-up of channels within the television schedule guide displayed on computer screen 50. In addition, the user can automatically tune to a desired program or can select different programs for automatic recording. For more information on automatic tuning and automatic recording, see U.S. Patent Nos. B1 4,706,121 and 5,353,121 as well as U.S. Patent Application No. 08/423,411; these patents and this patent application are, like the present patent application, assigned to Starsight Telecast, Inc. U.S. Patent Nos. B1 4,706,121 and 5,353,121 and U.S. Patent Application No. 08/423,411 are hereby incorporated by reference in their entirety for all purposes.

In another embodiment of the present invention, the computer 12 is equipped with a television/video board that contains a tuner. When this television/video board is located in computer 12, a computer user can view selected television programs/shows on computer monitor 50. Therefore, when a user selects a television program for automatic tuning, the television/video board is tuned to the channel carrying the selected television program such that the selected television program is automatically displayed on computer monitor 50.

In the embodiment of the present invention shown in Fig. 1, two programs provided at the same time can be automatically recorded because two VCRs 34 and 36 are present. The user need only select two programs for recording and the present invention will automatically cause the programs to be recorded when they are aired in an unattended fashion. The user can also directly select which device or devices will be recording or tuning for each selected program. For example, the user may wish to have **M.A.S.H.** 62 recorded by VCR 34 and **I LOVE LUCY** 64 recorded by VCR 36. In this example, the computer software on hard drive 14, at the program start time, (1) tunes VCR 34 to the channel carrying **I LOVE LUCY**,

(2) turns VCR 34 "on", and (3) activates the record function on VCR 34. If **I LOVE LUCY** starts at the same time as **M.A.S.H.**, the software also, at approximately the same time, (1) tunes VCR 36 to the channel carrying **M.A.S.H.**, (2) turns VCR 36 "on", and (3) activates the record function on VCR 36. At the program end time for **M.A.S.H.**, the software turns "off" the record function, and then turns "off" VCR 34. The same sequence takes place for VCR 36 when the program end time for **I LOVE LUCY** occurs.

In the preferred embodiment, two electronic devices are used to provide the schedule/control system herein. These two electronic devices allow for the interaction between computer system 10 and television system 30. The first electronic device is a computer accessory and the second is a video tape recorder controller/connector (VCR connector). The second electronic device can also be a television connector, set-top box connector and the like.

Fig. 3 illustrates a computer accessory for the computer system. Computer accessory 70 is any external hardware capable of controlling television 30, VCR 34 and/or VCR 36. In the preferred embodiment, computer accessory 70 is connected to computer 12 through available serial, parallel or other port 23. Clock 72, located within computer accessary 70 in the preferred embodiment, maintains current time. Battery 74 provides a continuous supply of power when the computer accessory's regular available power is not present. Memory 76 contains the key parameters needed for recording and/or tuning to a selected television program. These parameters include the date of the program, the start time for the program, the end time for the program, the television channel providing the program, and which peripheral device shall be addressed for recording or viewing the program.

Processor 80, also located within computer accessory 70, uses the software in the computer system to provide memory 76 with these key parameters. Memory 76 is a random access memory (RAM) and RF transmitter 78 is, for example, similar to a transmitter provided in a portable telephone or RF wireless headphones. RF transmitter 78 may be

substituted with, for example, IR emitters, modulated light signals (i.e., signal sent through optical fibre), or even a hardwire connection. In the preferred embodiment, RF transmitter 78 is used in conjunction with a remotely located VCR connector 90 to communicate parameters needed for automatic tuning and/or automatic recording to television system 30. Processor 80 uses clock 72 and memory 76 to provide the information needed for transmission by RF transmitter 78.

Fig. 4 illustrates a recording device connector for the television system. In the preferred embodiment, recording device (e.g., VCR) connector 90 is coupled to VCR 34 in television system 30, via line 37. This connector 90 can also be a television connector which is connected to television 32. VCR connector 90 contains RF receiver 94 which receives the information transmitted from RF transmitter 78. Infrared (IR) driver 96 then works in conjunction with IR driver 96 and IR emitter 98 to provide any necessary signals to other peripheral devices within television system 30. Processor 99 assists with this process.

For example, if a user decides to tune the television to a certain program which is presently available or to schedule the television to be tuned to a certain program at a future time, the user moves the cursor with user input device 60 to the desired show within computer screen 50 and enters it ("enter" key with a keyboard or "clicking" with a mouse). The information is provided to computer accessory 70 via line 23 and then automatically transmitted via RF transmitter 78 to RF receiver 94. IR driver 96 and IR emitter 98 then take the information from RF receiver 94 and immediately tune the television 32 to the channel providing the selected television program. More than one IR driver 96 may be used for the present invention. For example, one IR driver may be used for television 32, and another IR driver may be used for VCR 34. In addition, computer accessory 70 and VCR connector 90 (or the alternative devices which provide their functions as described below) can be located in

different rooms within a private residence or a commercial building.

If the user has selected a program from the computer for recording on VCR 34, at the selected program's start time, the information for activating and recording on the VCR is automatically sent from RF receiver 94, through VCR connector 90, to VCR 34 via line 37. Thus, in the preferred embodiment, at the start time of the selected program, (1) the VCR is turned "on", (2) the tuner (or an external device) is tuned to the channel carrying the selected program, and (3) the record function of the VCR is activated. Later, when the program end time occurs, the record function of the VCR is turned "off," and the VCR is turned "off." In this arrangement, IR driver 96 and IR emitter 98 are not used.

In the preferred embodiment, when IR driver 96 and IR emitter 98 are used, they act in the same way that a remote control would act to control the other peripheral devices (e.g., television 32, VCR 36, and the like) within television system 30. For example, if two programs occurring at the same time are selected for automatic recording, IR driver 96 and IR emitter 98 are used to (1) tune the tuner on a second VCR to the channel carrying the selected program, etc. For additional information of how an IR emitter can be used to act as a remote control, see U.S. Patent No. 5,151,789 to Young, which is hereby incorporated by reference in its entirety for all purposes.

In another embodiment of the present invention, VCR connector 90 is connected in series between VCR 34 and television 32 via line 38. In this arrangement, IR driver 96 and IR emitter 98 are not needed because information received by RF receiver 94 can be sent to either VCR 34 or television 32 via line 38. For example, line 38 is used to transmit the data for automatic tuning. When a user selects a television program for immediate viewing, a tuning command for changing the television tuner to the channel carrying the desired program is sent from RF transmitter 78 to RF receiver 94. Processor 80 then sends this tuning command from RF receiver 94 to television 32 via line 38.

In yet another embodiment of the present invention, IR driver 96 and IR emitter 98 are located in computer accessory 70 (see Fig. 3). When this configuration is present, VCR connector 90 is not needed. For example, when a desired television program is selected for automatic tuning, IR driver 96 and IR emitter 98 work in conjunction to tune television 32 to the channel carrying the desired program. Similarly, when a desired television program is selected for automatic recording, IR driver 96 and IR emitter 98, at the desired program start time, (1) tune the VCR to the channel carrying the desired program, etc. This arrangement can also be used when multiple desired television programs, airing at the same time, are selected for automatic recording. This is done in the same manner as described above. Also, if desired, the data providing the television schedule information to computer 12 can be organized into a desired format and then transmitted via computer accessory 70 to television 32 for immediate display on television 32. For automatic display on television 32 in this arrangement, computer accessory 70 must contain on-screen display generator (OSD) 82.

In yet another embodiment of the present invention, computer accessory 70 is located inside computer 12 (see RF transmitter 78 location in computer 12, Fig. 1) and/or VCR connector 90 is located inside, for example, VCR 34 or television 32. The location of computer accessory 70 and VCR connector 90 is not critical because the IR emitter allows for remote control of all of the peripheral devices.

In yet another embodiment of the present invention, the components of both computer accessory 70 and VCR connector 90 are located inside computer 12. Therefore, RF transmitter 78 and RF receiver 94 are not required. Computer 12 most likely has an internal battery and clock provided, so battery 74 and clock 74 may not be needed. Memory 76 can be provided by hard drive 14. Processor 80 may not be needed because processor 16 can perform its functions. In this embodiment, IR driver 96 and IR emitter 98 provide the tuning and recording parameters to television 32 and VCRs 34 and 36 (see Fig. 1 for placement of IR driver 96 and IR

emitter 98 within computer 12). Similarly, if computer 12 contains television/video board 19 in this arrangement, a selected television program can be viewed on computer screen 50. Additionally, a selected television program can be stored within computer 12 in a memory or mass storage device (e.g., hard drive 14, disk or tape). Thus, no need would exist for the transmission of parameters needed for automatic tuning and automatic, unattended recording, and the associated IR devices 96 and 98 would not be present. Finally computer 12, television 30, VCR 37 and all additional electronic devices could be on a home network. In this arrangement, no transmitters or internal receivers would be necessary.

Fig. 5 illustrates a process flow chart for the installation procedure. This process flowchart reveals the sequence used for installing the computer program needed for receiving, organizing, and displaying the television schedule information grid guide. This installation process flow allows for an account setup and for the downloading of schedule information. The data needed for the television schedule guide are downloaded to hard drive 14 in the preferred embodiment. As stated above, diskettes providing the computer program are placed in disk input 18 and installed on hard drive 14. The user is then asked to input various information. The system first requests the user's zip code at step 110. Billing information is requested at step 120, and method of payment along with associated information for payment is requested at step 130. In an alternative embodiment, billing information (e.g., credit care information or the like) may be input each time a user connects to an on-line service. Additionally, an automatic confirm may take place at step 120. For example, a user may already have an identification number from previous system use. Confirmation of this identification number would allow the system to access stored user profile information which contains the user's billing data.

In the preferred embodiment, modem speed for the communication setup is requested at step 140 (this step is

optional). The computer program, in conjunction with processor 16, checks to see if the update time interval is needed at step 150. The update time interval determines how often the television schedule guide information is updated for the user. For example, updates could take place each time computer 12 is booted-up, once a day, or 4 times a week. If the update time interval is needed, a request is sent to the user at step 160. If the time interval is not needed, a connection to the main site is made at step 170. The main site provides the data needed for the television schedule guide and receives information, such as a credit card number for billing purposes, via line 22. The user can then select which available channels will be displayed on computer screen 50 at step 180. Thus, the user can customize the displayed information at step 180. The user is then asked to input or select IR codes at step 190. These IR codes are used for communicating with peripheral devices within television system 30. In the preferred embodiment, these IR codes are sent to memory 76 within computer accessory 70. The data needed for the television schedule are then downloaded via line 22 at step 200. Processor 16 and the computer program installed on hard drive 14 work in conjunction to create the schedule guide for display on computer screen 50 at step 210.

Fig. 6 illustrates a process flow chart for the operation of the schedule/control system herein. At step 250, the user installs computer accessory 70 by coupling it to computer 12 via available serial or parallel port 23. At step 260, the user installs VCR connector 90 by connecting it to VCR 34 via line 37. At step 270, disk input 18 is used to provide hard drive 14 with the software needed for receiving, organizing and displaying data which provides the system's television schedule guide. This software also supplies the automatic tuning and automatic, unattended recording of the present invention. Thus, this software is taken from diskettes and stored/installed on hard drive 14. At step 280, the user or service person performs the installation/set-up procedure set forth in Fig. 5. At step 290, the data needed

for updating the schedule information are received via telephone line 22.

At step 300, the user can input any additional desired display parameters for the display of the television schedule guide. For example, the user can have certain channels eliminated from the displayed television schedule guide, or the user can select a particular order for each of the television channels within the guide. At step 310, the television schedule guide is displayed, upon user request, on computer screen 50 as shown in Fig. 2. At step 320, the user can enter a selection from the television schedule guide via user input device 60. The user can select a program for either automatic tuning or for automatic, unattended recording. At step 330, the software determines if the time for the automatic tune or record is equal to the present time. If the program start time is not equal to the present time, then the software waits at step 360. If the time equals the present time, then the software performs automatic tuning or automatic recording at step 340. Automatic tuning and automatic recording is set forth in U.S. Patent Application No. 08/423,411, as stated above. The process flow chart of Fig. 6 is then complete.

In another embodiment of the present invention, a computer program located, for example, on hard drive 14 can monitor and track user selections. This computer program can then be used to provide suggested television programs to the user. Additionally, if desired, the computer program can automatically schedule suggested television programs for automatic tuning and/or automatic, unattended recording.

Fig. 7 illustrates several arrangements for providing television schedule information from a database to a television for display. In one embodiment, on-line information providers (Prodigy, America On Line, Compuserve, MSN, AT&T, etc.) provide access to a database which contains the television schedule information. These on-line information providers can transmit data to television 400. In the preferred embodiment, a modem within accessory 402 is utilized to provide the data. Accessory 402 is attached to

television 400 and directly connected to telephone line 408 via the modem. The modem for access to the on-line service can also be located within television 400. Software, located either within accessory 402 or television 400, is used to search for and provide the data, along with providing several other features described below.

The available data, displayed on television 400, can emulate what a computer on-line user normally sees when accessing the internet through a personal computer. This television schedule data can also be further enhanced to "tie into" the television program that the user is viewing. Alternatively, accessory 402 may be replaced by accessory 422 which is attached to set-top box 420 (e.g., a cable box). The data provided via the on-line information provider is then transmitted to television 400 over line 440. Similarly, accessory 432, attached to VCR 430, can be used to obtain the television schedule data. The data would then be transmitted from VCR 430 to television 400 over line 450.

In another embodiment, the database with the television schedule information is located in memory 406 within television 400. Controller 404 is used to obtain the data from memory 406 so that is can be displayed on television 400. Alternatively, the database with the television schedule information could be located in memory 426 (within set-top box 420) or in memory 436 (within VCR 430). Controller 424 or controller 434 would be used to obtain the data which would then be sent to television 400 for display via line 440 or line 450. Therefore, the technology that enables the television schedule information to be provided from a database to a television for display is not specific to any given data system. In summary, this technology can be resident in the user's set-top box 420, television 400, VCR 430, personal computer or the like.

The television schedule information provided from a database can be used to provide information which is independent of the user's program choice. For example, from a television schedule guide, the user can utilize remote control 410 to press a Services button. This Services button

can be located on remote control 410 or within the television schedule guide display. When the Services button is pressed, the user is given choices such as News, Weather, Sports, Scores, Financial Data, Local Traffic, etc. Using remote control 410, the user can then select the area or title of interest, and the associated information from the database is provided. If accessory 402 is used, a modem accesses the on-line service which provides the information from the database. Once this connection is made, the user has two-way communication with the on-line service provider. The user can then go deeper into the given selections or, if requested and keyboard 462 is available, can access the Internet and enter chat rooms or other interactive services. In the preferred embodiment, keyboard 462 is either an IR keyboard or connected to port 460 on accessory 402.

In yet another embodiment, a television program title and/or a program's content could be linked to an on-line service or to an available database. In this arrangement, a user, in conjunction with the data made available through an electronic program guide (or navigational system), can link, search and select more information relating to specific areas of interest or concerns associated with a program or a program's title. In the preferred embodiment, a user of an electronic program guide (e.g., as described above) can conduct a search for information about a particular program/television show or for information relating to the show, the actors, the actresses, the show's theme, and other related information through selection via a user interface. This linking of program title and/or program content to additional related information could be operable whenever a program title is accessible in a electronic program guide. Additionally, this linking could be available whenever a user requests it via the currently tuned program.

For example, a user previewing the program such as a movie (e.g., "Casablanca") can receive information regarding (1) the actors and actresses in that movie, (2) other movies released during the same time period, (3) associated available products, (4) related travel packages, and (5) advertisements

and promotions available through primary, secondary or third party vendors. Utilizing a user interface such as remote control 410 or keyboard 462, the user can indicate to the electronic program guide what information they would like to view on television 400. The electronic program guide then lists a selection of choices for the user. In the preferred embodiment, the choices are associated with the context of the selected program and can be changed via the electronic program guide supplier. In a specific "Casablanca" example, the choices might be (1) Other Humphrey Bogart Movies, (2) Other Lauren Bacall Movies, (3) Other Movies Released in the Same Era, or (4) Associated Products. The user selects from the presented choices, and the electronic program guide contacts and communicates with the database of available information for more detailed information relating to the user's choice. Once contact and communication is established between the user and the database of available television information, the electronic program guide acts as an agent to assure that the information flow and appropriate data is exchanged. At this point, the user can delve deeper into the available information by selecting from a series of further choices or related topics. For example, if the user chooses (1) Other Humphrey Bogart Movies option, the electronic program guide contacts and communicates with the selected database of available information. The database of available information is then used to collect the requested data of other Humphrey Bogart movies. The selected choice is transmitted and used by the electronic program guide as it's contextual reference for the search. A list with the search results is then displayed on television 400.

Once the user sees the list of other Humphrey Bogart movies, the user can select any of the available titles for recording or watching. In the preferred embodiment, each time the available database is contacted and searched, previously selected movies can be identified. In addition, a user can select certain types of programs to be recorded or watched before any particular program is available to the electronic program guide. Moreover, each time a connection is made to an

on-line service, the software can search the database and set the selected types of programs to be recorded. These features enable a consumer to never miss a favorite program.

In another example, a user is viewing a sporting event. If the Services button is pressed, a different menu appears including the following choices: (1) Sports Scores, (2) Current Game Statistics, (3) Current Player Statistics, and (4) Associated Products. If the user selects (4) Associated Products, the software, for example, accesses the modem within accessory 402 and dials an on-line service provider. The on-line service provider then lists a series of selections associated with the game (e.g., 49er's hats, Giant's Baseball Bats from Louisville Slugger, Nike Spiked Football shoes for Pop Warner, etc.).

In yet another embodiment of the invention, the system is able to aid the user in identifying programs of potential interest. This embodiment of the invention is compatible with the system regardless of whether the electronic guide is located within a computer database, a stand-alone peripheral device (e.g., set-top box), a television, a VCR, or elsewhere. Furthermore, manipulation of the program guide information can be performed utilizing the electronic program guide's internal controller/data processor or using an external data processor (for example, a computer) coupled to the electronic program guide.

Fig. 8 illustrates the preferred procedure for utilizing this embodiment of the invention. At step 805, the user selects the program guide feature. This selection can either be accomplished using a remote controller or a switch located on a component of the television system (i.e., television, VCR, set-top box, computer, etc.). At step 810, the user selects a particular program from the program guide. Selection of the particular program in step 810 results in an information menu appearing on the user's television or computer screen (step 815). At step 820, the user requests that the selected program be marked as a FAVORITE. At step 825 the system, through a series of questions, determines the criteria the user had applied in selecting the program as a

FAVORITE. At step 830, and after completing the series of questions posed in step 825, the user can return to the information menu, return to the program guide, go back to the program being viewed prior to entering the system's program guide mode, or continue using the FAVORITE feature of the system.

At step 835, the user requests that the system identify potential favorites based on the previously entered favorite selection criteria. The system can either be configured to continually check all new program listings for potential favorites or check for favorites only when requested to do so by the user. In an alternate embodiment of the invention, the system automatically determines and identifies potential favorites after the user has entered a set of favorite selection criteria.

Potential favorite programs can be identified in a number of different ways (step 840). First, within the program guide potential favorites can be identified with a mark near the title (for example, an asterisk), using a different typeface for the title, or by color coding the grid block containing the title of the potential favorite. Second, potential favorites can be displayed in a list separate from the program guide, this list preferably being displayed only when requested by the user.

Fig. 9 is an illustration of an initial menu 900 in the preferred embodiment of the invention, this menu being displayed once the user identifies a program as being a FAVORITE. Menu 900 lists a series of criteria that the user may have used in identifying the program as a favorite. The user is able to select either single items or multiple items from menu 900. Criterion 905 lists INDIVIDUAL PROGRAM. This selection is typically identified by the user as a default when the user has selected a particular program for no apparent reason. For example, the user may have noticed that a particular movie had extremely good reviews and therefore wanted to see the movie. When this selection is made, the system may provide additional questions, for example, GOOD REVIEWS, RECOMMENDATION OF A FRIEND, BY CHANCE, or the system

may simply record the entry as further data regarding this particular user's interests.

Criterion 910 lists SERIES AS A WHOLE. Typically if the user selects this entry the system will identify all future programs from this same series as FAVORITES.

Criterion 915 lists PERFORMERS. When the user selects PERFORMERS, the system may present additional menus which then allow the user to identify which performers in the program are of particular interest. For example, if the user had identified "Legends of the Fall" as a FAVORITE, and then selected PERFORMERS from menu 900, the system may provide an additional menu which lists ANTHONY HOPKINS, BRAD PITT, JULIA ORMOND, and OTHER as the possible selections. Once the user has identified a specific performer as the reason why a particular program was identified as a FAVORITE, the system can then find and identify other programs containing the same performers. For instance, if in the above example the user had identified Anthony Hopkins as the particular performer of interest, the system might identify another movie containing the same performer, such as "Silence of the Lambs," or might identify another program on which Anthony Hopkins was a guest, such as "The Tonight Show."

Criterion 920 lists CATEGORY. If the user selects CATEGORY, the system may present additional menus listing a number of different categories. For example, the subsequent menu may list COMEDY, DRAMA, ACTION, SUSPENSE, TALK SHOW, HORROR, MUSICAL, CHILDRENS, ADULT, CLASSIC, LOCATION, CINEMATOGRAPHY, etc. Subsequent menus may also be available to further refine the selection criterion applied by the user. For example, COMEDY may have a subsequent menu listing SERIES, MOVIE, STARRING A STAND-UP COMEDIAN, SLAP-STICK, etc. Based on this input, the system can then identify additional programs of potential interest to the user.

Criterion 925 lists DIRECTOR. If the user selects DIRECTOR, preferably the system records the director of the present FAVORITE as a FAVORITE DIRECTOR and attempts to identify other programs directed by the same director.

In another embodiment of the invention, the system keeps an on-going data list for one or more users. In this embodiment each user of the system identifies themselves to the system either before or after requesting that a particular program be marked as a FAVORITE. User identifications may be by name, by code word, or by user number. After identifying the user, the system inputs the particular user's favorite selection criteria under that user's data file. Thus User 1 may have all cooking programs and all NFL games as their selection criteria while User 2 may have all programs in which either Jerry Seinfeld or Anthony Hopkins perform. Furthermore, the user has the ability to continually modify their selection criteria. For instance, in the above example User 2 may delete Anthony Hopkins as a FAVORITE PERFORMER 2 weeks after making this addition, and then 3 weeks later add Ed Wood as a FAVORITE DIRECTOR.

In yet another embodiment of the invention, the system can be configured to utilize a user's set of preferences in other ways than those previously disclosed. For example, besides using the information to identify and mark programs of potential interest to the user, the system can be configured to remind the user when a program of potential interest is about to air. The system can also be configured to automatically record programs of potential interest. The system can also be configured to automatically record programs of potential interest unless it is determined that the user is presently viewing the program of interest (i.e., the television system is presently tuned to the program of potential interest).

In yet another embodiment of the system, instead of the user initially identifying a particular program as a FAVORITE, the user simply enters selected preferences and requests that the system search the available program guide for potential programs of interest. Preferably, within the THEMES AND SEARCHES menu there is a subcategory entitled FAVORITES. When the user selects the FAVORITES category, a sub-menu 1000 is displayed as illustrated in Fig. 10. Sub-menu 1000 lists several different categories from which the

user can select. For example, sub-menu 1000 may list such categories as PERFORMERS, DIRECTORS, YEAR OF RELEASE, SERIES, MOVIES, TITLE, etc. In this embodiment, the system is provided with a means for the user to input alpha-numeric characters. Thus if the user enters "Seinfeld" under the category PERFORMERS, and indicates that the program of interest is a SERIES, the system would identify the "Jerry Seinfeld" program as being of potential interest. Therefore if the user has any information regarding a particular program or a type of program which is of interest, this embodiment of the invention allows the user to search the existing program guide for that particular program.

The means for inputting characters and numbers into the system can be a simple remote controller with an alpha-numeric keypad. The system can also be designed to display alpha-numeric characters on the television or computer screen and means for the user to select specific characters. For example, after the user selects PERFORMERS, a menu 1100 as illustrated in Fig. 11 can be displayed. In one embodiment of this system, the user moves a cursor displayed on the screen using a set of arrow keys on the remote controller. Once the cursor is moved to the desired location on the screen, the user presses an ENTER key on the remote controller. This process continues until the desired name or date has been entered into the system. In an alternate embodiment, the system further includes a database which includes such information as performers, directors, and movie titles. In this embodiment, after the user has entered a predetermined number of characters (for example, three) the system provides the user with a list of all the information within the database meeting the given criteria. For example, if the user selected MOVIES and entered "DR." the system might provide a list which includes "Dr. Doolittle," "Dr. Zhivago," "Dr. Jekyll and Mr. Hyde," and "Dr. Strangelove." If the user then selected "Dr. Strangelove" the system would search the program guide to see if the desired movie was to be presented in the near future. The system can also be configured to continually

search the program guide as it is updated, notifying the user when the desired program has been located.

In yet another embodiment of the invention illustrated in Fig. 12, the system actively searches for programs of potential interest whenever the user views a program. In order to rule out programs which the user is only casually viewing, preferably the system does not attempt to locate programs of potential interest until the user has watched a particular program for at least a predetermined period of time, for example, 10 minutes. (Step 1205). After the user has continually watched a particular program for the predetermined period of time, the system develops a series of criteria to use to search the program guide for other programs fitting the same criteria and therefore of potential interest to the user. (Step 1210) For example, if the user watches the "Jerry Seinfeld" program, the system may use any or all of the following as search criteria: 1/2 hour comedy programs, comedies, programs starring a stand-up comedian, programs in which Jerry Seinfeld is a performer. If any programs fitting the perceived criteria are found, the system notifies the user. (Step 1215) For example, the system may flash OTHER PROGRAMS on the bottom of the screen. In a different configuration, the system may require the user to select OTHER PROGRAMS from an information menu. If the user asks for additional information about the OTHER PROGRAMS, the system supplies the user with a list. (Step 1220) The user can then select one or more of the programs from the OTHER PROGRAMS list to (i) view immediately, (ii) be reminded of prior to broadcast, or (iii) record. (Step 1225).

As will be understood by those familiar with the art, the present invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. Accordingly, disclosure of the preferred embodiment of the invention is intended to be illustrative, but not limiting, of the scope of the invention which is set forth in the following claims.

WHAT IS CLAIMED IS:

1. A method of determining potentially desirable programs in a television system, said method comprising the steps of:

selecting a specific program listing from an electronic program guide, said program guide containing a plurality of program listings, wherein said program guide is displayed to a user;

designating said specific program listing as a favorite program;

identifying at least one selection criterion used in selecting said specific program from said program guide; and

applying said identified selection criterion to said plurality of program listings within said program guide to determine potentially desirable programs, wherein said applying step is performed by a data processor coupled to said television system.

2. The method of claim 1, wherein said selection criterion is selected from the group consisting of performer, director, film location, series, individual program, category, and cinematography.

3. The method of claim 2, further comprising the step of identifying at least one specific performer associated with said favorite program.

4. The method of claim 2, further comprising the step of identifying at least one specific director associated with said favorite program.

5. The method of claim 2, further comprising the step of identifying a specific category associated with said favorite program, wherein said specific category is selected from the group consisting of comedy, drama, suspense, talk-show, horror, musical, action, childrens, adult, and classic.

6. The method of claim 1, further comprising the step of marking the program listing corresponding to said potentially desirable programs.

7. The method of claim 6, wherein said step of marking is performed using a technique selected from the group consisting of placing a notation next to said program listing, using a distinguishable typeface for said program listing, placing an outline around said program listing, and using a distinguishable color for said program listing.

8. The method of claim 1, wherein said applying step is automatically repeated each time said program guide is updated.

9. The method of claim 1, further comprising the step of compiling and storing said identified selection criterion in a database each time one of said program listings from said program guide is selected and designated as a favorite program.

10. The method of claim 9, wherein said compiled and stored selection criterion is modifiable by adding or deleting additional selection criterion.

11. The method of claim 9, further comprising the step of correlating said compiled and stored selection criterion with a specific user, said user selected from a plurality of users.

12. The method of claim 1, further comprising the step of notifying a user of said television system prior to a start time of said determined potentially desirable program.

13. The method of claim 1, further comprising the step of recording said determined potentially desirable program on a VCR, said VCR coupled to said television system.

14. The method of claim 1, further comprising the step of compiling a list of said potentially desirable programs.

15. A method of identifying potentially desirable programs in a television system, said method comprising the steps of:

selecting a specific program listing from an electronic program guide, said program guide containing a plurality of program listings, wherein said program guide is displayed on a screen coupled to said television system, and wherein each listing of said program guide is characterized by an independent set of program features;

designating said specific program listing as a favorite program;

identifying a specific set of program features associated with said favorite program, wherein said identifying step is performed by a data processor coupled to said television system;

comparing each set of program features associated with each program listing in said program guide to said specific set of program features; and

identifying each program listing as representing one of said potentially desirable programs in which the set of program features corresponding to said identified program listing is equivalent to said specific set of program features.

16. The method of claim 15, wherein equivalent is defined as having at least one program feature of said set of program features in common with at least one program feature of said specific set of program features.

17. A method of searching an electronic program guide coupled to a television system, wherein said program guide contains a plurality of program listings, and wherein each listing of said program guide is characterized by an

independent set of program features, said method comprising the steps of:

entering at least one desired program feature into a data processor coupled to said television system, wherein said desired program feature is selected from the group consisting of performer, director, producer, title, film location, and year of release;

comparing each program feature associated with each program listing in said program guide to said desired program feature; and

identifying each program listing as a potentially desirable program in which at least one program feature of said identified program listing is equivalent to said desired program feature.

18. The method of claim 17, further comprising the step of marking said identified program listing corresponding to said potentially desirable program.

19. The method of claim 17, wherein said entering step is performed using an alpha-numeric keypad.

20. The method of claim 17, wherein a specific name is associated with each of said desired features, and wherein said specific name is entered with an alpha-numeric keypad, said method further comprising the steps of:

comparing a portion of said entered specific name to a database coupled to said data processor, said database containing a plurality of names associated with said program features characterizing said plurality of program listings; and

displaying each of said program listings in which at least a portion of one of said names associated with said program features which characterize said displayed program listing is equivalent to said portion of said entered specific name.

21. A television system comprising:

a data processor coupled to said television system;

a database coupled to said data processor, said database containing a program guide, said program guide containing a plurality of program listings;

a screen coupled to said television system capable of displaying said program guide; and

a user input device coupled to said data processor for designating a specific program listing as a favorite program, wherein said data processor is configured to generate a displayable list of selection criteria in response to the designation of said favorite program and to allow at least one specific selection criterion to be identified, said specific selection criterion used in the determination of said favorite program, and wherein said data processor is configured to compare said specific selection criteria to said plurality of program listings to determine potentially desirable programs, said potentially desirable programs meeting said identified specific selection criterion.

22. The television system of claim 21, wherein said displayable list of selection criteria is selected from the group consisting of performer, director, film location, series, individual program, category, and cinematography.

23. The television system of claim 21, wherein said data processor is configured to generate a second displayable list of selection criteria in response to the identification of said specific selection criterion, wherein said second displayable list of selection criteria is a subset of said identified specific selection criterion.

24. The television system of claim 21, wherein said data processor is configured to generate a display of said potentially desirable programs.

25. The television system of claim 21, wherein said data processor is configured to generate an alternate program guide in which said program listings representing said potentially desirable programs are distinguishable from said program listings not representing said potentially desirable programs.

26. The television system of claim 21, wherein said data processor is configured to compile and store said identified specific selection criterion in said database each time a specific program listing is designated as a favorite program.

27. The television system of claim 26, wherein said compiled and stored selection criterion is correlated to a specific user.

28. The television system of claim 21, wherein said data processor is configured to record said potentially desirable program on a VCR coupled to said television system.

29. A television system comprising:

a data processor coupled to said television system;

a database coupled to said data processor, said database containing a program guide, said program guide containing a plurality of program listings, wherein each program listing of said program guide is characterized by an independent set of program features, said program features stored in said database;

a screen coupled to said television system capable of displaying said program guide; and

a user input device coupled to said data processor for designating a specific program listing as a favorite program, wherein said data processor is configured to compare said set of program features corresponding to said favorite program with said set of program features corresponding to each of said program listings in said program guide to determine potentially desirable programs, said potentially

desirable programs having at least one program feature of said set of program features in common with at least one program feature of said set of program features corresponding to said favorite program.

30. A television system comprising:

a data processor coupled to said television system;

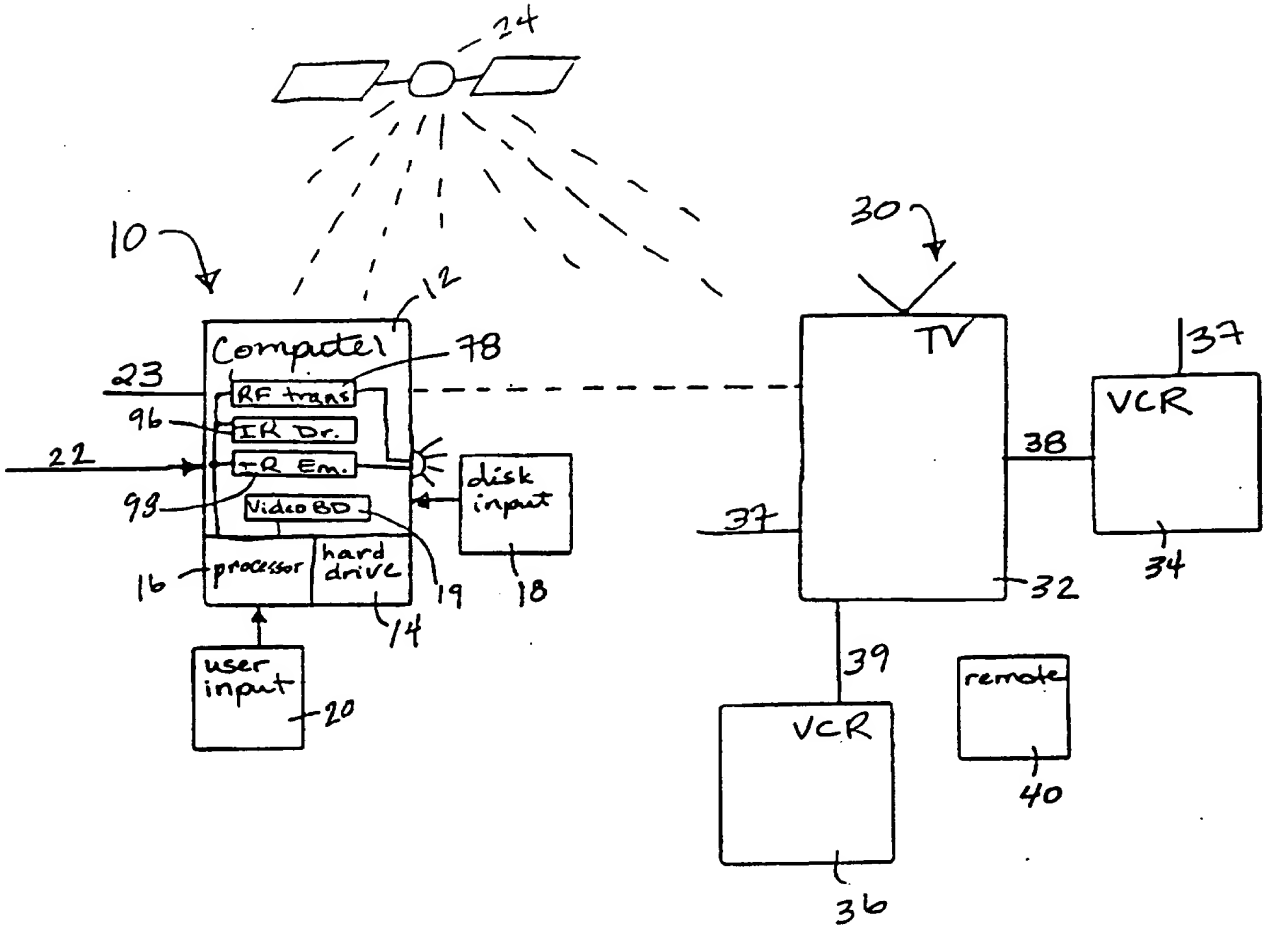
a database coupled to said data processor, said database containing a program guide, said program guide containing a plurality of program listings, wherein each program listing of said program guide is characterized by an independent set of program features, said program features stored in said database;

a screen coupled to said television system capable of displaying said program guide; and

a user input device coupled to said data processor for inputting at least one desired program feature, wherein said program feature is selected from the group consisting of performer, director, producer, title, film location, and year of release, wherein said data processor is configured to compare said desired program feature with said set of program features corresponding to each of said program listings in said program guide to determine potentially desirable programs, said potentially desirable programs having at least one program feature of said set of program features in common with said desired program feature.

31. The television system of claim 30, further comprising an alpha-numeric keypad for entering a specific name associated with each of said desired program features, said data processor configured to compare a portion of said entered specific name to said database, said database containing a plurality of names associated with said program features characterizing said plurality of program listings, wherein said data processor generates a display of said program listings in which at least a portion of one of said names associated with said program features which characterize

said displayed program listing is equivalent to said portion of said entered specific name.


24
10
12
30
Computer
78
23
RF trans
96
IR Dr.
22
IR Em.
99
Video BD
disk input
processor
hard drive
16
19
18
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user input
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TV
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VCR
38
37
34
32
39
VCR
remote
40
36

Fig. 1

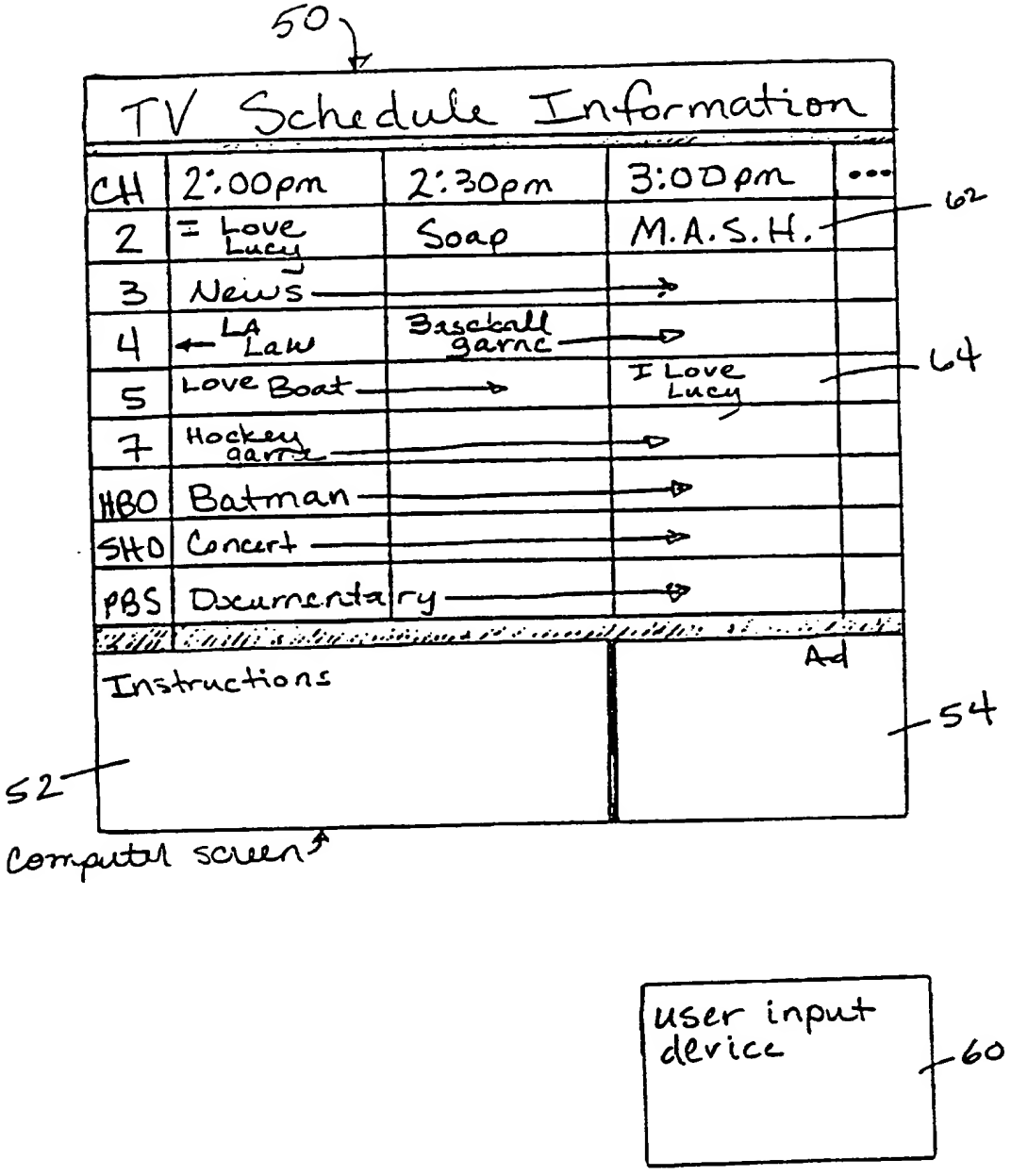

50
TV Schedule Information
CH
2:00pm
2:30pm
3:00pm
...
2
I Love Lucy
Soap
M.A.S.H.
62
3
News
4
LA Law
Baseball game
5
Love Boat
I Love Lucy
64
7
Hockey game
HBO
Batman
SHO
Concert
PBS
Documentary
Ad
Instructions
54
52
Computer screen
user input device
60

Fig 2

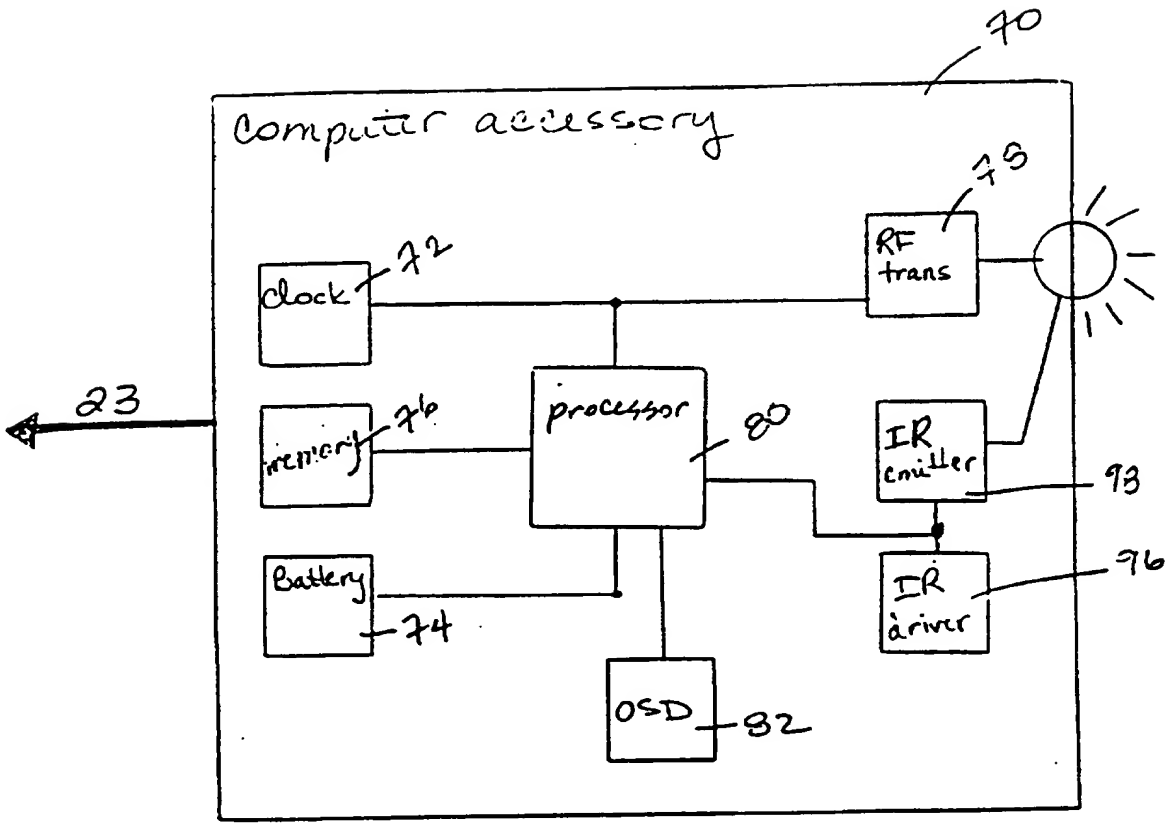

70
Computer accessory
78
RF trans
72
clock
23
memory
76
processor
80
IR emitter
93
Battery
74
IR driver
96
OSD
82

Fig. 3

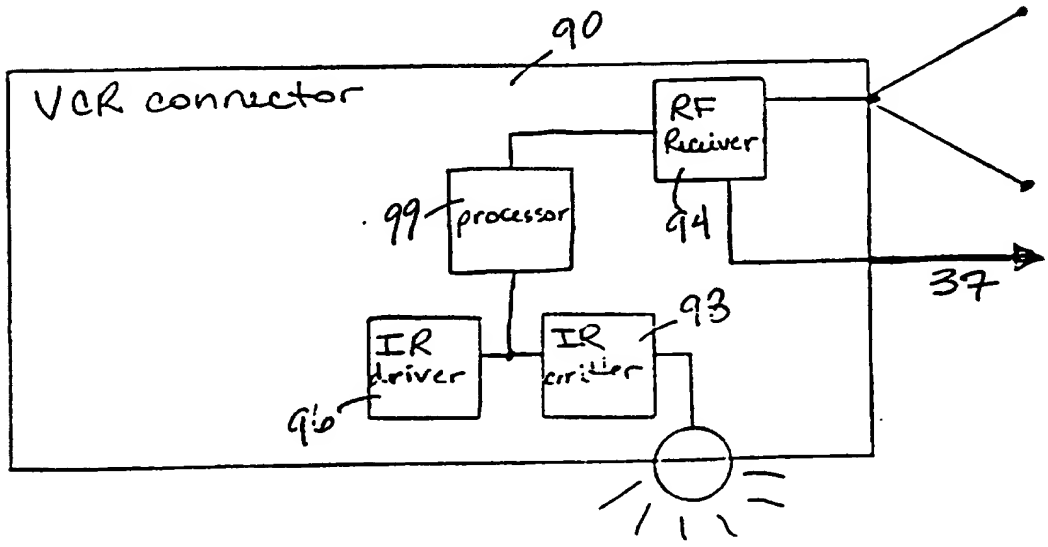

90
VCR connector
RF Receiver
99
processor
94
37
93
IR driver
IR emitter
96

Fig. 4

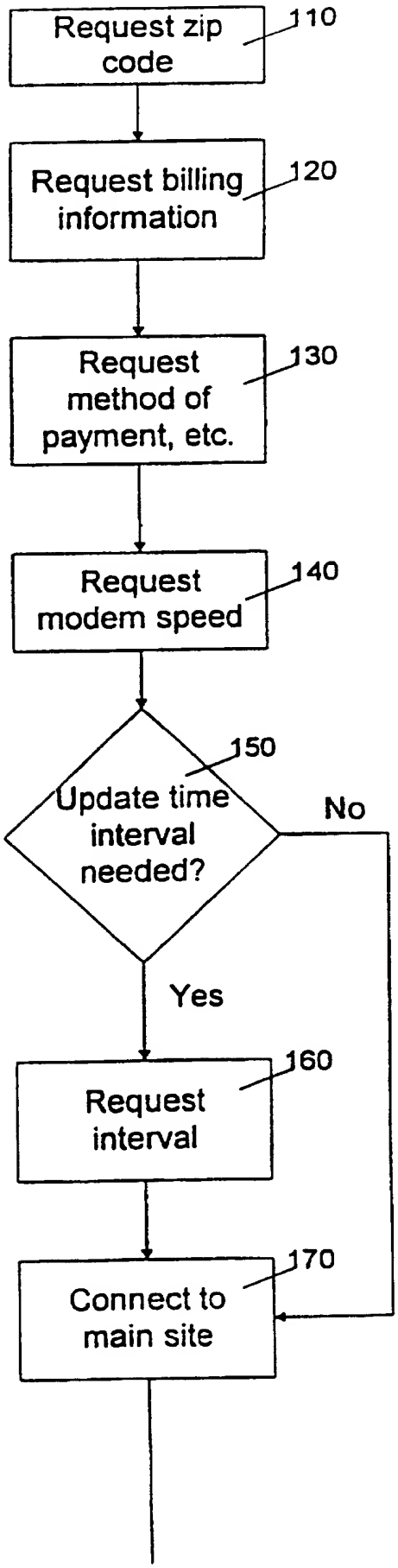

Request zip code
110
Request billing information
120
Request method of payment, etc.
130
Request modem speed
140
Update time interval needed?
150
No
Yes
Request interval
160
Connect to main site
170

Fig. 5A

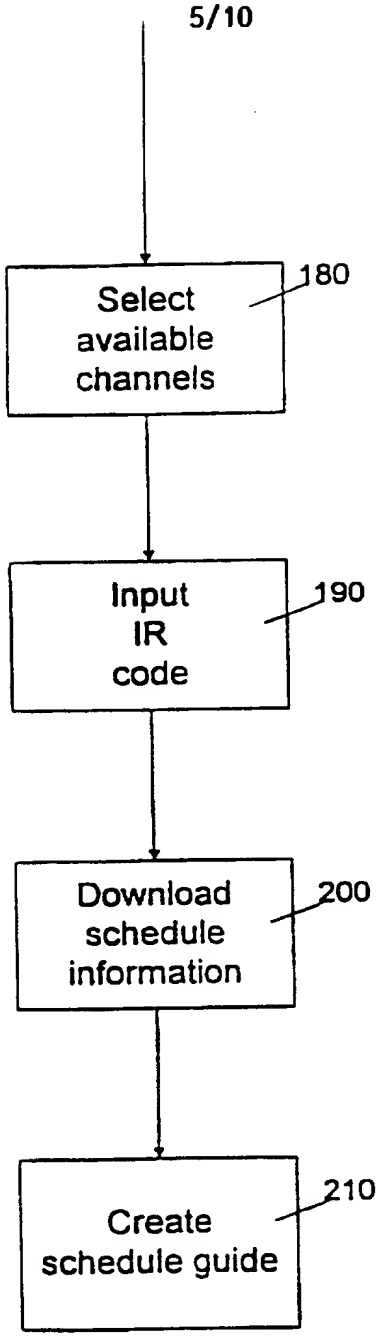

Select available channels
180
Input IR code
190
Download schedule information
200
Create schedule guide
210

Fig. 5B

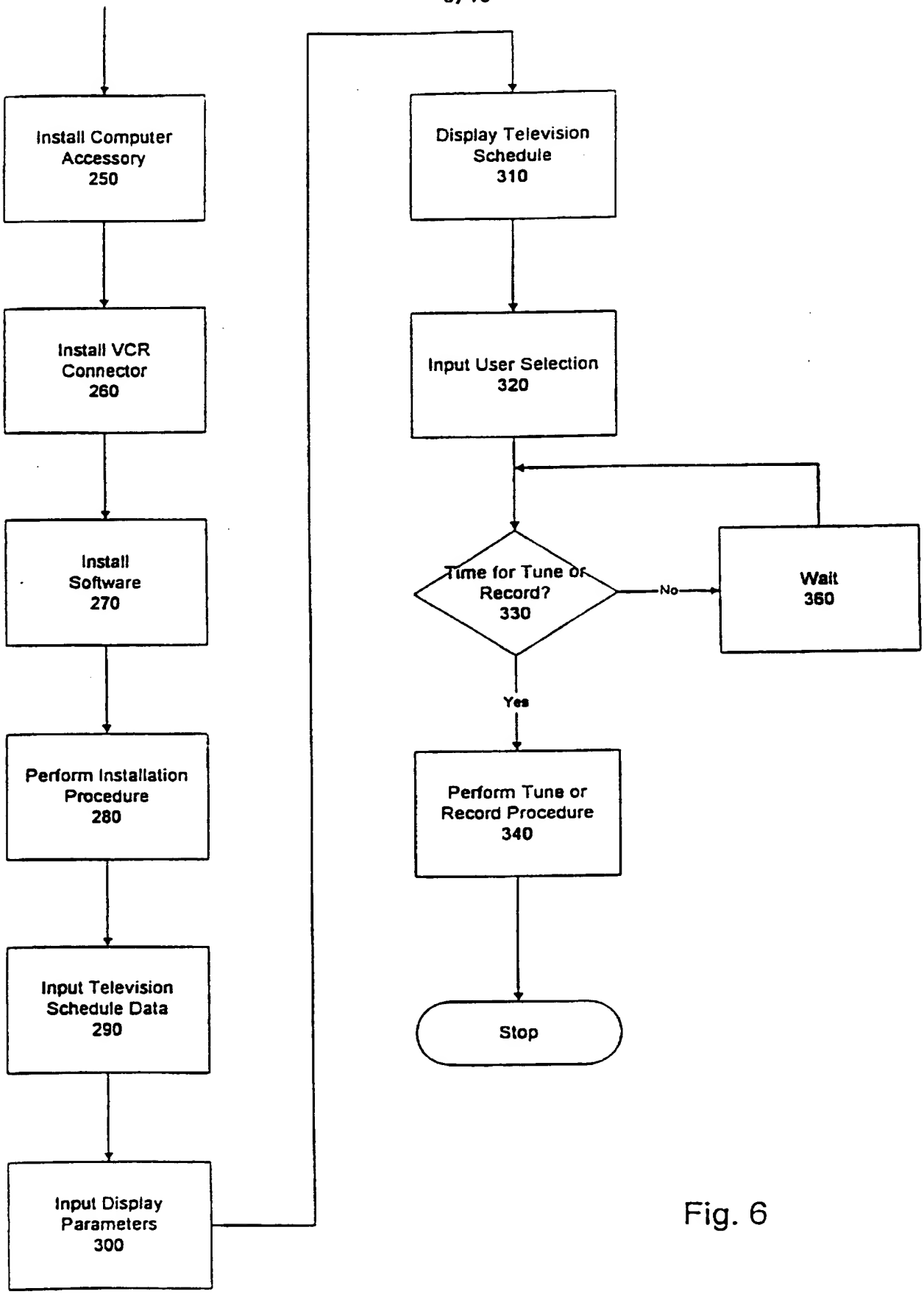

Install Computer Accessory 250
Install VCR Connector 260
Install Software 270
Perform Installation Procedure 280
Input Television Schedule Data 290
Input Display Parameters 300
Display Television Schedule 310
Input User Selection 320
Time for Tune or Record? 330
No
Wait 360
Yes
Perform Tune or Record Procedure 340
Stop

Fig. 6

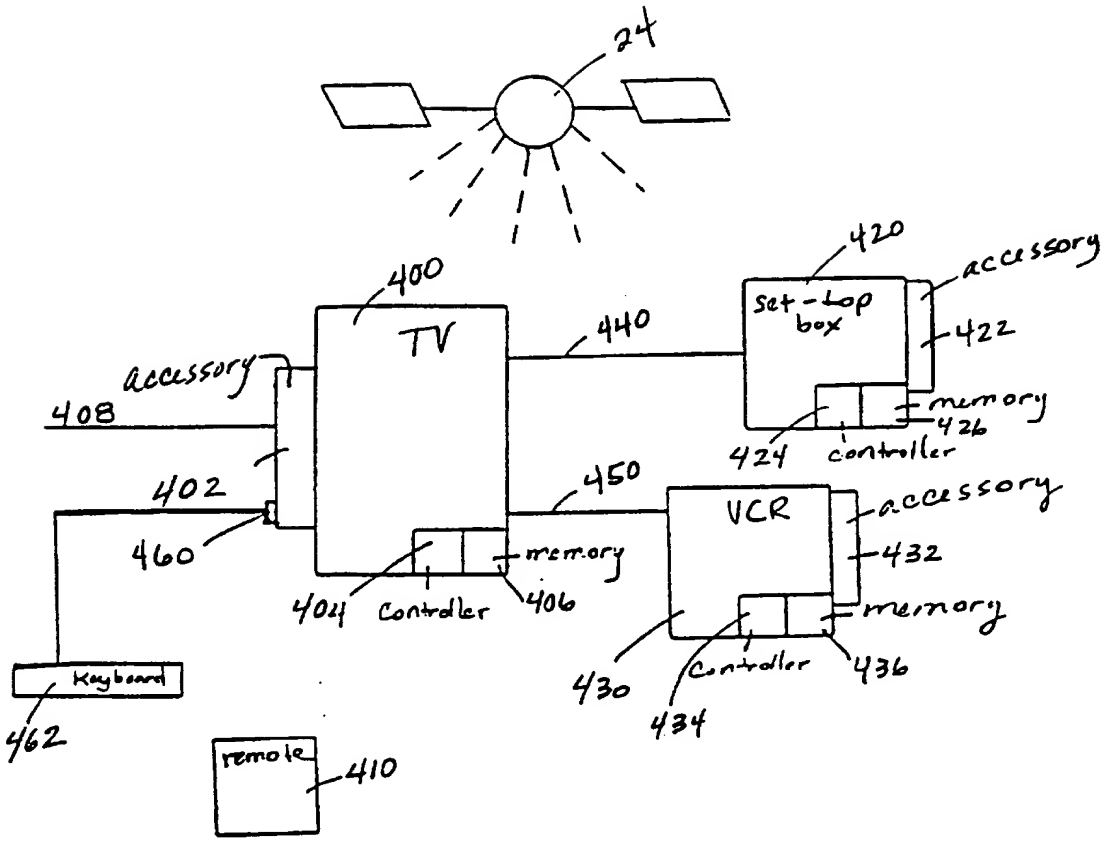

24
400
TV
420
accessory
Set-Top box
422
440
accessory
408
402
460
450
VCR
accessory
432
memory
426
424
controller
memory
404
controller
406
430
controller
434
436
Keyboard
462
remote
410

Fig. 7

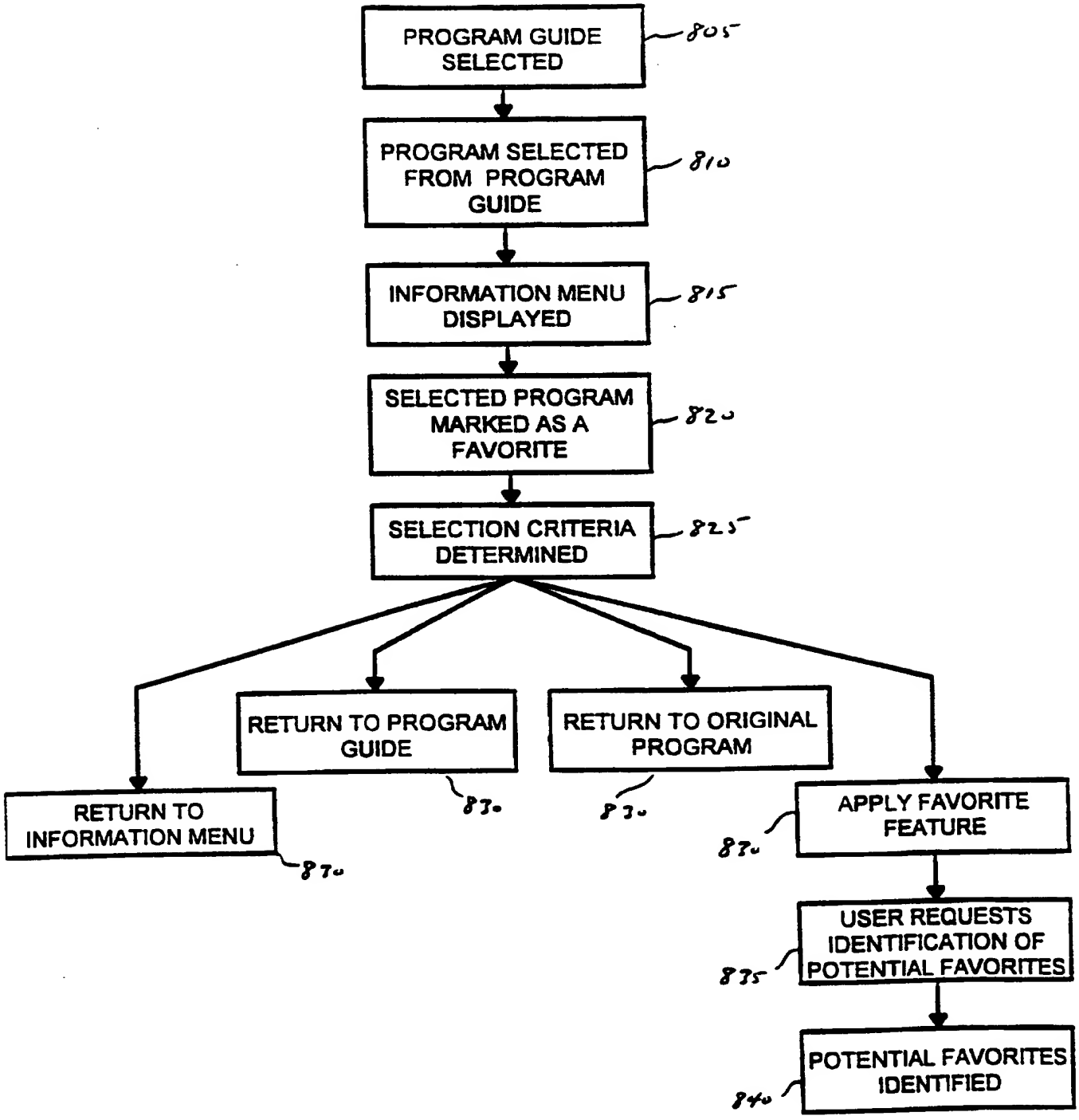

PROGRAM GUIDE SELECTED
805
PROGRAM SELECTED FROM PROGRAM GUIDE
810
INFORMATION MENU DISPLAYED
815
SELECTED PROGRAM MARKED AS A FAVORITE
820
SELECTION CRITERIA DETERMINED
825
RETURN TO INFORMATION MENU
870
RETURN TO PROGRAM GUIDE
830
RETURN TO ORIGINAL PROGRAM
830
APPLY FAVORITE FEATURE
870
USER REQUESTS IDENTIFICATION OF POTENTIAL FAVORITES
835
POTENTIAL FAVORITES IDENTIFIED
840

FIG. 8

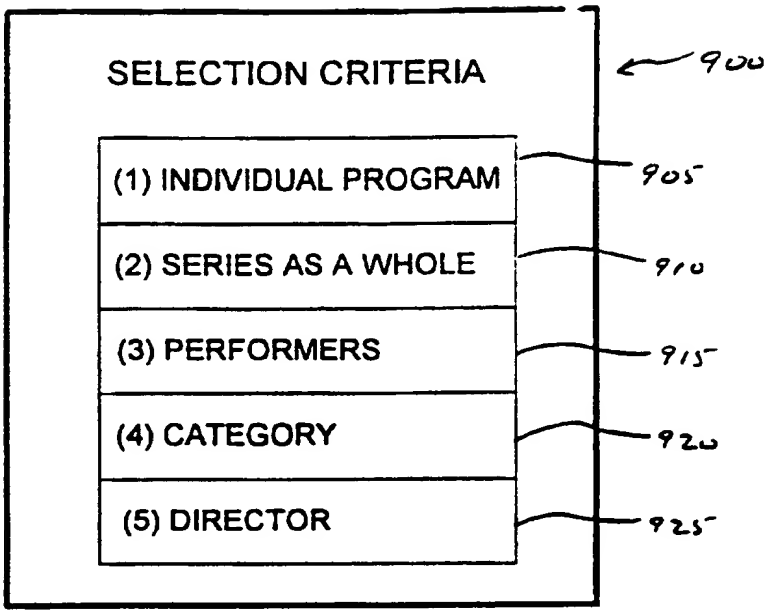

SELECTION CRITERIA
900
(1) INDIVIDUAL PROGRAM
905
(2) SERIES AS A WHOLE
910
(3) PERFORMERS
915
(4) CATEGORY
920
(5) DIRECTOR
925

FIG. 9

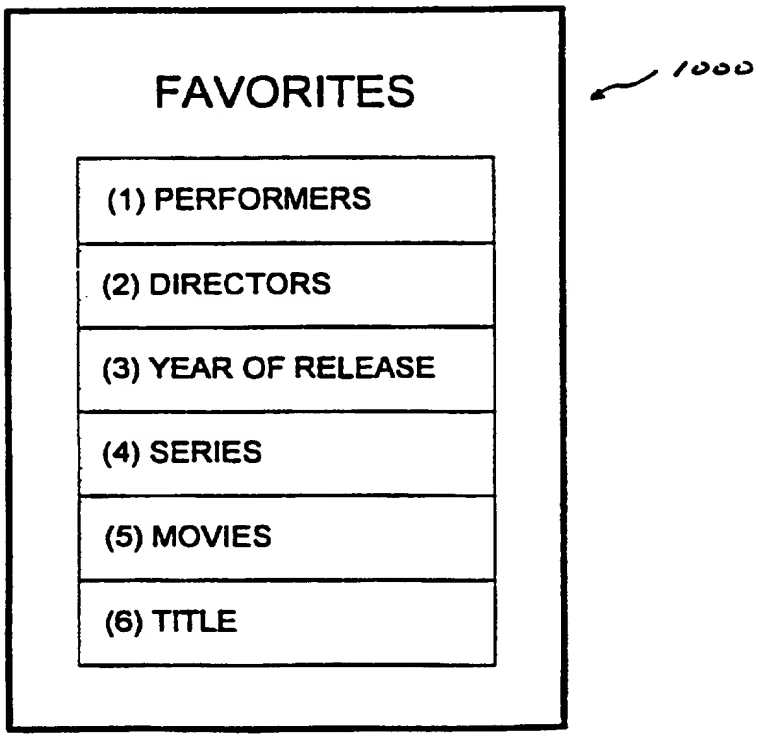
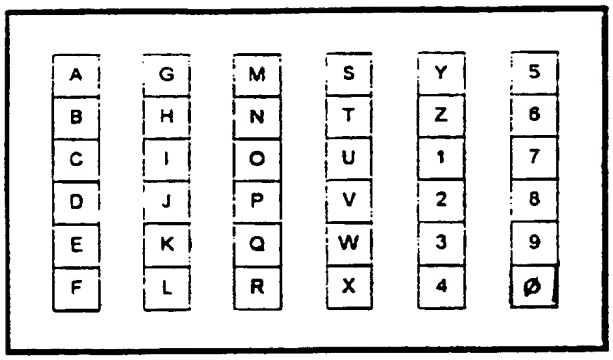

FAVORITES
1000
(1) PERFORMERS
(2) DIRECTORS
(3) YEAR OF RELEASE
(4) SERIES
(5) MOVIES
(6) TITLE

FIG. 10


A
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C
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E
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G
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I
J
K
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M
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O
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Q
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S
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U
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1
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3
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6
7
8
9
Ø
1100

FIG. 11

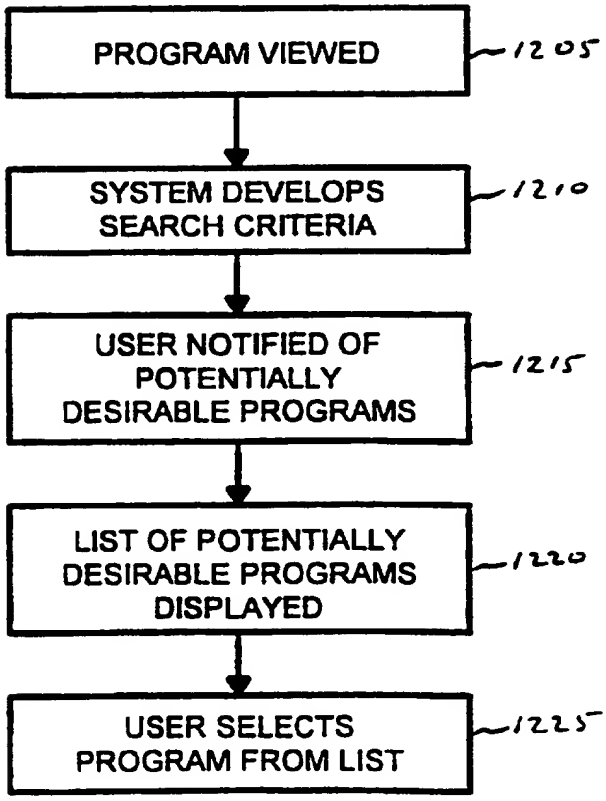
PROGRAM VIEWED
1205
SYSTEM DEVELOPS SEARCH CRITERIA
1210
USER NOTIFIED OF POTENTIALLY DESIRABLE PROGRAMS
1215
LIST OF POTENTIALLY DESIRABLE PROGRAMS DISPLAYED
1220
USER SELECTS PROGRAM FROM LIST
1225

FIG. 12

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/09488

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) : HO4N 7/00, 7/10
US CL : 348/1, 908, 13
According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 348/1, 908, 6-13; 455/4.2, 5.1, 6.1-6.3

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS
search terms: program guide, favorite, desire, profile, catergor###, criteria, television, cable#, interactive

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 5,483,278 A (STRUBBE et al) 09 January 1996, entire document. | 1-3, 5, 8-11, 14-16 |
| --- | | --- |
| Y | | 4, 6, 7, 12, 13 |
| Y,P | US 5,585,838 A (LAWLER et al) 17 December 1996, col. 9, lines 41-45. | 6,7 |
| X,P | US 5,534,911 A (LEVITAN et al) 09 July 1996, entire document, especially fig. 4-5, col. 3, lines 35-49. | 17-18 |
| --- | | --- |
| Y,P | especially fig. 3, fig. 4. | 12, 13, 19, 20, 28 |

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

| | | | |
|---|---|---|---|
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| Date of the actual completion of the international search<br>15 AUGUST 1997 | Date of mailing of the international search report<br>11 SEP 1997 |
| Name and mailing address of the ISA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, D.C. 20231<br>Facsimile No. (703) 305-3230 | Authorized officer<br>LINUS H. LO<br>Telephone No. (703) 305-4039 |

Form PCT/ISA/210 (second sheet)(July 1992)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/09488

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 5,526,034 A (HOARTY et al) 11 June 1996, entire document, especially fig. 36-40. | 21-27, 29-31 |
| --- | | --- |
| Y | especially fig. 37, col. 19, lines 20-47. | 4, 19, 20, 28 |
| A | US 5,410,344 A (GRAVES et al) 25 April 1995, entire document. | 1-31 |
| A,E | US 5,635,989 A (ROTHMULLER) 03 June 1997, entire document. | 1-31 |
| A,P | US 5,594,509 A (FLORIN et al) 14 January 1997, col. 15 line 28-col. 16, line 63, col. 18, line 9-col. 20, line 31. | 1-31 |

**PCT** WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04N 5/445

A1

(11) International Publication Number: **WO 98/26584**

(43) International Publication Date: 18 June 1998 (18.06.98)

(21) International Application Number: PCT/US97/22753

(22) International Filing Date: 9 December 1997 (09.12.97)

(30) Priority Data:

| | | |
|---|---|---|
| 60/032,539 | 10 December 1996 (10.12.96) | US |
| 08/938,028 | 18 September 1997 (18.09.97) | US |

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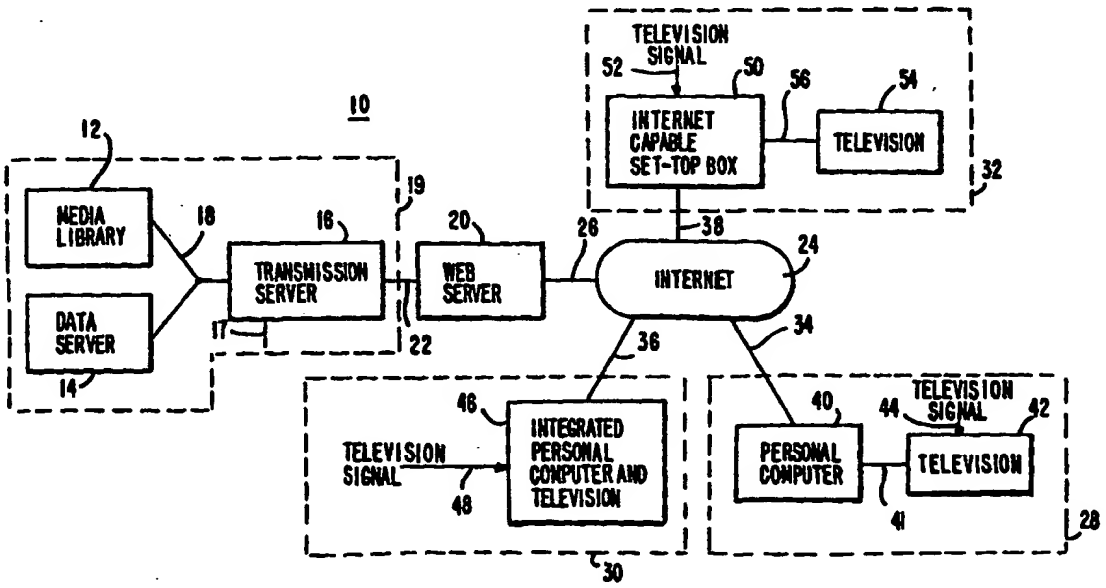
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

**Published**

*With international search report.*

*Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

(54) Title: INTERNET TELEVISION PROGRAM GUIDE SYSTEM




(57) Abstract

An Internet television program guide system is provided that allows a user at a multimedia system to access information related to television programs over an Internet communications link. The user can view television program guide listings and related video stills and video clips. The user can perform database searches on the program guide listings (e.g., to search for a particular type of television program). If desired, the user can select an option that directs the multimedia system to tune directly to a television channel for a selected program or to a related television program guide or movie guide service on a television channel. The user can order pay–per–view events using the system.

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# INTERNET TELEVISION PROGRAM GUIDE SYSTEM

## Background of the Invention

This invention relates to the Internet, and more particularly, to techniques for providing television program guide information and services to a user over the Internet.

A large number of television channels are available over cable television systems and satellite television systems. Television viewers have traditionally had to consult preprinted television program listings to determine which programs were scheduled to be broadcast on a particular day. More recently, television-based program guides have been developed that allow television viewers to view television program listings directly on their television sets.

For example, the Prevue® channel is a scrolling television program listings service that a cable system operator may make available to subscribers over a dedicated cable channel. Viewers can tune to the appropriate television channel to view program listings for television programs that are currently being broadcast and are scheduled to be broadcast in

the next few hours. Although the Prevue® channel is a valuable service, the viewer is somewhat constrained by the passive nature of the service. For example, the viewer cannot view television listings for the next day or week.

As a result, more advanced television program guide services have been developed that allow the service provider to deliver television program listing data to the user's set-top box. The data is typically delivered over the television cable system infrastructure (e.g., on a given television channel during the vertical blanking interval or over an out-of band channel.) Software in the set-top box allows the viewer to display the television program listings on the viewer's television set.

These program guide services allow the user to manipulate the television listings by searching or sorting through the listings using criteria such as genre, channel, and broadcast time. An example of a such an interactive television program guide is the Prevue Express® guide of Prevue Networks, Inc. of Tulsa, Oklahoma, the assignee of the present invention.

Although passive scrolling guides and interactive set-top box guides are useful sources of television program guide information, millions of users with personal computers have not been able to obtain on-line television program listings. In addition, users have not been able to select from diverse options that allow the user to view promotional video clips, interview segments, audio clips, and other multimedia material related to a given television program.

It is therefore an object of the present invention to provide a television program guide system that provides television program listings from a server to a user's multimedia system over an Internet communications link.

It is a further object of the present invention to provide a television program guide system that allows users to click on text or still images to view promotional video clips, audio clips, interview segments, and other multimedia material related to a given television program.

Summary of the Invention

These and other objects of the invention are accomplished in accordance with the principles of the present invention by providing an Internet television program guide system. A computer system having a media library and a data server is used to provide multimedia clips and related television program guide data. The multimedia material and program guide data are provided to a web server. The web server provides this information to the user's multimedia system via an Internet communications link.

The multimedia system has a processing unit for receiving information from the Internet communications link and processing such information accordingly. The multimedia system also has a video unit for receiving television signals. In a first embodiment, the processing unit is based on a personal computer running a standard web browser with plug-ins. The video unit is based on a television. In a second embodiment, the processing unit and video unit of the

multimedia system are provided by an integrated personal computer and television unit. In a third embodiment, the processing unit is in an Internet capable set-top box and the video unit is based on a television.

The web server may be located adjacent to the computer system and the program guide data and multimedia material provided to the multimedia system via the Internet. Alternatively, the web server may be located in a cable system headend. When the web server is located in the cable system headend, program guide data and other multimedia material may be provided to the web server via a satellite link. The program guide data and multimedia material are provided to the multimedia system over an Internet communications link.

Television program guide data and related multimedia information are preferably provided to the user's multimedia system in the form of one or more web pages. Because such an arrangement allows the use of the widely adopted hypertext transfer protocol (http) and emerging web standards, a user with a personal computer can access information using commonly available web browser software. Because program guide information is distributed over the Internet, the user can access this information at remote locations. For example, the user can access the television program guide service while traveling by car, bus, train, or plane, from a hotel room or business meeting, from a personal computer at work, or in any suitable environment in which there is a link to the Internet. In all arrangements (whether the user is accessing the program guide service from their home or from a remote

location), the system benefits from using the established protocols and standards of the Internet.

In addition, because the Internet television program guide is provided as a web site having a number of linked web pages, features can be easily added or deleted from the service by the service provider, without directly affecting the hardware and software of the user.

Using a web site platform also allows a wide range of service options to be provided. In particular, numerous media formats (animation, full motion video, sound, still images, and text) are supported and may be interconnected using various embedded hypertext transfer protocol links.

Further features of the invention, its nature and various advantages will be more apparent from the accompanying drawings and the following detailed description of the preferred embodiments.

## Brief Description of the Drawings

FIG. 1 is a system diagram showing a media library and data server interconnected with a web server and various multimedia systems.

FIG. 2 is a generalized diagram of a user's multimedia system.

FIG. 3 is a system diagram similar to that of FIG. 1 showing an arrangement in which the web server is located in a cable system headend.

FIG. 4 is a diagram of a home page for an Internet television program guide.

FIG. 5 is a diagram of a map-based menu for identifying a geographical area of interest.

FIG. 6 is a diagram of a map-based menu for a smaller geographical region than shown in FIG. 5.

FIG. 7 is a web page informing the user that no service is available.

FIG. 8 is a web page offering alternatives to local service.

FIG. 9 is a web page allowing the user to provide information regarding the user's multimedia system to the service provider.

FIG. 10 is a web page presenting various program guide options to the user.

FIG. 11 is a web page containing information on community events.

FIG. 12 is a web page providing the user an opportunity to give feedback to a local cable system operator.

FIG. 13 is a web page containing information pertaining to the local cable operator's system.

FIG. 14 is a web page containing weather information.

FIG. 15 is a web page presenting various program guide options including direct links to related program guide and movie guide television channels.

FIG. 16 is a web page containing television program guide listings organized by time.

FIG. 17 is a web page presenting a menu of channel selections.

FIG. 18 is a web page containing television program guide listings organized by channel.

FIG. 19 is a web page containing icons representing category options.

FIG. 20 is a web page containing television program guide listings organized by category.

FIG. 21 is a search page containing a box for entering search text and various search field options.

FIG. 22 is a television program guide listing page based on the results of a search.

FIG. 23. is a web page presenting program guide options related to promotional clips, interview segments, and pay-per-view and premium services.

FIG. 24 is a web page presenting various image stills that may be selected by the user when it is desired to view related video clips.

FIG. 25 is a web page presenting user options regarding pay-per-view and premium services.

FIG. 26 is a web page containing television program listings for a selected pay-per-view channel.

FIG. 27 is a web page containing television program listings for a selected premium channel.

FIG. 28 is a web page providing information regarding upcoming pay-per-view sporting and special events.

FIG. 29 is a web page containing still images corresponding to available interview segments.

FIG. 30 is a program information web page containing information on a program selected by the user and presenting related options.

FIG. 31 is a web page that allows a user to enter information for ordering a pay-per-view event.

FIG. 32 is a web page that provides a showcase for advertisers.

FIG. 33 is a web page containing detailed advertising information on a selected topic or television program.

FIG. 34 is a site map showing the options that are selected and the links that are traversed in navigating among the television program guide web pages of FIGS. 4-33.

Detailed Description of the Preferred Embodiments

An Internet television program guide system 10 is shown in FIG. 1. Television program information is stored in media library 12 and data server 14. Media library 12 preferably contains an array of compact disc read only memory (CD-ROM) disks, digital video disks (DVDs), or other suitable media for storing multimedia content. Media library 12 contains television program clips and related interviews and reviews. The television program information stored in media library 12 is primarily video-based. Data server 14 maintains various databases of television program information. For example, data server 14 may have a remote media database containing descriptions of videos in media library 12. Data server 14 may also have a database containing information on standard titles, a pay per view database containing information regarding pay-per-view events, and a scheduling information database. Data server 14 may have a cable system operator database containing channel lineups, information on the time zone of the operator, weather data for the operator's region, data on the zip codes in the cable system operator's area, etc. Other databases may be supported by data server 14, as

desired. The television program information in data server 14 is primarily in non-video formats.

Media library 12 and data server 14 are interconnected with transmission server 16 via internal network 18. Media library 12, data server 14, network 18, and transmission server 16 make up computer system 19. Television program information may be stored on data server 14 in a relational database format and may be stored on transmission server 16 in an object-oriented database format. A building process implemented in the C++ programming language can be used to periodically (e.g., once a day) build a temporary data set of television program information (e.g., a seven-day to one-month data set) for storage on transmission server 16. Transmission server 16 also receives information for the Internet television program guide service such as weather data, sports scores, etc., via data input 17.

Television program information and related data may be transferred from transmission server 16 to web server 20 via communications line 22. Communications line 22 may be part of an internal network or may be a standard dedicated communications line. Web server 20 can be connected to the Internet 24 via communications link 26. Communications link 26 is preferably a telephone line or other suitable Internet communications path.

If transmission server 16 and web server 20 are separate devices, as shown in FIG. 1, transmission server 16 can be used as a common data processing facility for other applications which use the type of television program data stored on transmission server

16. If desired, the functions of transmission server 16 and web server 20 can be integrated in a signal machine.

Web server 20 uses a standard protocols such as the TCP/IP (Transmission Control Protocol/ Internet Protocol) and hypertext transfer protocol to make the television program information available over the Internet 24 to users at multimedia systems 28, 30, and 32 via communications links 34, 36, and 38. Communications links 34, 36, and 38 are Internet links formed from telephone lines, radio-frequency (RF) links, cable modem links, satellite dish links, combinations of links such as these, or any other suitable Internet connection paths.

Multimedia system 28 has personal computer 40 and may have television 42. Certain program guide features require that personal computer 40 be able to control television 42 via link 41, which may be, e.g., an infrared communications link. Link 41 allows personal computer 40 to tune television 42 using control signals. Television 42 receives television signals from input 44. The television signals received by input 44 and the other television signal inputs shown in FIGS. 1-3 may be provided by cable television, satellite television, broadcast television, a combination of such sources, or any other suitable source of television programming signals. Internet access for multimedia system 28 is provided via Internet communications link 34.

Multimedia system 30 has an integrated personal computer and television 46, such as the Gateway 2000 Destination® PC-TV hybrid available from

Gateway 2000 Inc. of North Sioux City, South Dakota. Television signals are provided at input 48. Internet access is provided via Internet communications link 36.

Multimedia system 32 has an Internet capable set-top box 50. Set-top box 50 may use the TV OnLine® set-top box application software of World Gate Corporation, which may be implemented on set-top boxes such as the CFT-2200® of General Instrument Corporation of Hatboro, Pennsylvania and the 8600x® of Scientific Atlanta of Atlanta, Georgia. Set-top box 50 receives television signals via input 52. Internet access is provided via Internet communications link 38. Video display signals containing television and Internet information are provided to television 54 by line 56.

During operation of system 10, certain data processing functions, such as user-initiated searches and sorts, are typically performed on web server 20. If desired, such functions can be performed on a suitable data processing component in multimedia systems 28, 30, and 32.

Certain television guide functions require only that multimedia systems 28, 30, and 32 contain web browsing capabilities. Other functions require television tuning and video recording capabilities. FIG. 2 shows a generalized multimedia system arrangement that is capable of supporting controlled television tuning and video recording, if desired. As shown in FIG. 2, multimedia system 58 has a processing unit 60, which preferably contains memory for storing instructions and a microprocessor for executing the instructions. Processing unit 60 accesses the Internet via Internet link 62. Video unit 64, which may be

connected to processing unit 60 by communications line 66, contains recording unit 68, tuner 70, and monitor 72. Television signals are received at input 74.

Tuner 70 is used to select television programs from television signals on input 74 for viewing or recording. Tuner 70 may be controlled under the direction of control signals provided by processing unit 60 over communications link 66. Television signals and Internet information can be viewed using monitor 72. Recording unit 68 allows the user to make videocassette recordings of television programs. Recording unit 68 may also be controlled by control signals from processing unit 60.

The operation of processing unit 60 is determined based on the execution of instructions stored in memory in processing unit 60 and on control inputs received from the user via user interface 76. Suitable user interfaces include handheld infrared remote controls, keyboards, pointing devices, and voice recognition devices.

Multimedia systems such as multimedia system 58 of FIG. 2 may be used in place of multimedia systems 28, 30, and 32. Alternatively, systems such as systems 28, 30, and 32 may be modified to incorporate features like those shown multimedia system 58. For example, if it were desired to provide a multimedia system with circuitry to handle video recording, video recording units (such as recording unit 68) could be provided in systems such as multimedia systems 28, 30, and 32. In addition, in systems such as system 58, certain components may be used more than once (e.g., tuner 70

may be contained within both a television component and a videocassette recorder component in system 58).

Regardless of the specific configuration of the multimedia systems used in system 10, the user of such a multimedia system has the capability to access television program guide information on web server 20. Many of the features of the Internet program guide service are available using multimedia systems with the capabilities of a modern personal computer (desktop or laptop). If it is desired to use certain program guide features that rely upon controlling a tuner or recording unit, the multimedia system should also have the ability to tune to a desired television program from among the various television programs provided at inputs 44, 48, 52, and 74 and have the ability to record that program automatically, under the control of commands from processing unit 60. Additional features may also be implemented on multimedia system 58.

Another configuration that may be used for an Internet television program guide system is shown in FIG. 3. As shown in FIG. 3, Internet television program guide system has media library 80 and data server 82. Media library 80 contains television program clips, interviews, and reviews. The television program information stored in media library 80 is primarily video. Data server 82 contains databases of television program information. For example, data server 82 may have a database containing descriptions of videos in media library 80. Data server 82 may also have a databases containing information on program titles, pay-per-view events, and television program schedules. Data server 82 may have a cable system

operator database containing channel lineups, information on the time zone of the operator, weather data for the operator's region, data on the zip codes in the cable system operator's area, etc. Other databases may also be supported by data server 82. The television program information in data server 82 is mainly in formats other than video.

Media library 80 and data server 82 are interconnected with transmission server 84 via internal network 83. Media library 80, data server 82, and internal network 83 make up computer system 87. Television program information may be stored on data server 82 in a relational database format and may be stored on transmission server 84 in an object-oriented database format. A building process implemented in the C++ programming language may be used to periodically (e.g., once a day) build a temporary data set of television program information (e.g., a seven-day to one-month data set) for storage on transmission server 84. Transmission server 84 also receives information for the Internet television program guide service such as weather data, sports scores, etc., via data input 85.

A web server 86 is provided in each cable system headend 88. Cable system headend 88 has additional components (not shown) for distributing cable television signals to customers in the service area surrounding headend 88. Providing web server 86 in a location that is relatively close to users allows television program information to be provided to the users efficiently.

Television program information (including video clips and associated television program data) is transmitted from transmission server 84 to each cable system headend 88 via satellite uplink 90 and satellite downlink 92. Each web server 86 uses the Internet TCP/IP protocol to make the television program information available to users at multimedia systems 94, 96, and 98 via respective communications links 100, 102, and 104. Communications links 100, 102, and 104 are Internet links formed from telephone lines, radio-frequency (RF) links, cable modem links, satellite dish downlinks, combinations of links such as these, or any other suitable Internet connection paths. Although illustrated as direct links between multimedia systems 94, 96, and 98 and web server 86, communications links 100, 102, and 104 may be Internet paths that pass through extensive portions of the Internet.

Multimedia system 94 has personal computer 106 and may have television 108. Television 108 receives television signals from input 110. Access to web server 86 is provided via Internet communications link 100.

Multimedia system 96 has an integrated personal computer and television 112, such as the Gateway 2000 Destination PC-TV hybrid. Television signals are provided at input 114. Access to web server 86 is provided via Internet communications link 102.

Multimedia system 98 has an Internet capable set-top box 116, such as the TV OnLine® set-top box. Set-top box 116 receives television signals via input 118. Access to web server 86 is provided via Internet

communications link 104. Video display signals containing television and Internet information are provided to television 120 by line 122.

The system hardware shown in FIGS. 1-3 for providing television program guide Internet services is illustrative and other suitable hardware arrangements may be used, if desired. Regardless of the particular hardware system that is used, however, the present invention preferably involves providing television program guide services and features to users over the Internet in the form of multiple web pages that use the standard hypertext transfer protocol (http). In the system of FIG. 1, web pages and associated program guide features (such as searching, etc.) are provided using web server 20. In the system of FIG. 3, web pages and associated features are provided using web server 86.

Because television program guide services are provided using web pages, the program guide services may be accessed using standard web browsers operating on the appropriate processing unit in the user's multimedia system. For example, in multimedia system 58 of FIG. 2, a web browser may be implemented using processing unit 60. Suitable web browsers include the Internet Explorer® web browser of Microsoft Corporation of Redmond, Washington and the Netscape Navigator® web browser of Netscape Communications Corporation of Mountain View, California. Such web browsers support the viewing of various types of multimedia content, such as video stills (JPEG or GIF files) and video and audio clips (AVI, MOV, and MPG files). If desired, certain of these multimedia support functions may be

provided as web browser plug-ins (i.e., special software modules designed to enhance the features of a web browser application). A suitable video player plug-in for MOV files is the Quicktime® application of Apple Computer, Inc. of Cupertino, California. AVI and MPG (or MPEG -- Motion Picture Expert Group) files may be played using the ActiveMovie® application of Microsoft Corporation.

An illustrative welcome page 124 for the television program guide service of the present invention is shown in FIG. 4. (A site map is shown in FIG. 34.) Web browser function keys 126 help the user at multimedia system 58 to navigate through web pages of material such as welcome page 124. Users may also navigate by clicking on an image or an element of highlighted text with cursor 142, which may be controlled by a pointing device such as a mouse or trackball. Other arrangements for selecting links may be used if supported by the user interface 76 that is provided in multimedia system 58. Web browser function keys 126 include back and forward keys that allow the user to navigate backward and forward along a browsing trail. Web browser function keys 126 are not shown in the other FIGS., but are shown in FIG. 4 to illustrate the types of function keys that are available with a standard web browser.

Welcome page 124 may contain identifying logos 128 (which may be, for example, United States trademarks). Identifying logos 128 allow a user to quickly associate a service provider, such as the assignee of the present invention, Prevue Networks, Inc. of Tulsa, Oklahoma, with the Internet television

program guide service. If desired, welcome page 124 can contain summary instructions 130 that inform the user of some of the features available with the service. Other web pages (not shown) may contain links that point to welcome page 124.

Advertisements 132 and 134 allow a service provider to generate revenues from parties who wish to advertise products using Internet television program guide system 10 (FIG. 1) or 78 (FIG. 3). Advertisements 132 and 134 may be video stills, may be animated, or may include full-motion video. Audio material can also be associated with advertisements 132 and 134. For example, supplemental audio information can be provided when a user clicks on advertisement 132 or 134. If desired, advertisements 132 and 134 may be linked to web sites provided by the advertising parties. The advertisements 132 and 134 that are displayed may periodically (e.g., once every few seconds) cycle through different advertisements for different advertisers.

An important aspect of the Internet television program guide service provided by system 10 (FIG. 1) and system 78 (FIG. 3) relates to on-line television program listings and information on upcoming movies and special events. The user may be presented with a number of choices regarding the type of on-line information that is available. For example, the user may be presented with the opportunity to select between go local option 136, go national option 138, and go satellite option 140. Additional features of the service may be accessed after the user has selected one of these options.

If the user desires to select go local option 136, the user may be prompted to enter a zip code for the local area of interest in box 144. If service is available, the program guide system links the user to an appropriate the local system operator's web site based on the zip code information. If desired, the user can select a local area by entering information such as a cable system operator's name, the name of a city, international country and city information, etc. Another way in which the user may select a local service area of interest is using a map-based graphical user interface. As shown in FIG. 5, the user is presented with United States map 146. The user selects a state of interest using cursor 142. If necessary, additional maps containing greater levels of detail are provided, each allowing the user to make further geographical selections. Ultimately, the user is presented with a local map (e.g., a map that allows the user to select from several available cable system operators). In map 148 of FIG. 6, the user can select between three available cable system operator regions: region 1, region 2, and region 3.

If no local service is available, the user may be provided with a web page such as no service page 150 of FIG. 7, in which the user is informed that local service is not presently available in the area selected by the user. No service page 150 may provide the user with an opportunity to submit the user's e-mail address, cable provider information, local zip code information, and comments. Information provided by the user can be used by the operator of the television

program guide system to solicit participation from non-participating local cable operators.

If no local service is available, the user may also be provided with pick again page 152, as shown in FIG. 8. Pick again page 152 provides the user with another opportunity to select go national option 138 or go satellite option 140. In addition, pick again page 152 provides the user with select a city option 154, which is associated with a less restrictive set of program information than go local option 136 (FIG. 4). With select a city option 154, the user may select a desired city using arrow key 156 (or alternatively, could type the name of the city directly into box 158). After entering the desired city, the city information is submitted to the system by clicking on submit button 160. Because select a city option 154 is less localized than go local option 136, choosing select a city option 154 makes it more likely that there will be a set of program listings available for the user.

If service is available for the user in either the city selected in city option 154 or the localized geographic area selected in go local option 136, the user is presented with registration page 162, as shown in FIG. 9. Registration page 162 may contain instructions prompting the user to enter an e-mail address and information concerning the user's computer equipment. As with many of the other web pages provided in connection with the Internet television program guide service of systems 10 (FIG. 1) and 78 (FIG. 3), registration page 162 contains an identifying logo 164 and advertisements 166 and 168.

Upon completing registration page 162, the user is presented with local cable site page 170 of FIG. 10, which is customized to reflect the local geographic area or city selected by the user. Local cable site page 170 may contain a welcome message 172 that is customized to reflect the name of the local cable system operator.

A number of options 174 may be presented as hypertext links to associated web pages. An image 175 is displayed that changes as the user places cursor 142 on top of each option 174. For example, the image 175 of FIG. 10 is presented when the user positions cursor 142 over program guide option 190. Different images are displayed as cursor 142 passes over each option 174. The images 175 to be displayed are stored as bitmap images in processing unit 60 of multimedia system 58 (FIG. 2). This technique of presenting context-sensitive images to illustrate the current position of the cursor over hypertext link options is preferably used throughout the Internet television program guide service.

Various web pages may be displayed depending on which option 174 is selected by the user. For example, selecting community events option 176 presents the user with community events page 178 (FIG. 11), which contains information on local upcoming community events. If desired, the listed community events may be specific to the type of service to which the user subscribes (e.g., cable or satellite).

Selecting cable feedback option 180 presents the user with cable feedback page 182 (FIG. 12), which

allows the user to submit an e-mail address and comments to the local cable system operator.

Selecting cable operator option 184 takes the user to cable operator page 186 (FIG. 13), which contains information related to the local cable system. For example, by clicking on icon 187, the user may be provided with a weekly report prepared by the cable system operator.

If the user wishes to customize the program guide service, the user may click on customize option 185 (FIG. 10). Selecting customize option 185 presents the user with a customization web page containing guide features that the user can customize, such as channel line-ups and genre-specific display colors (e.g., pink for sports program listings and orange for movie program listings). The customization web page may also contain user-selectable options that control how the user receives reminder messages when a desired program is about to start on the user's television. The user can direct the system to provide a pop-up reminder on the television screen, to send the user an e-mail reminder, or to remind the user via a predetermined paging number, etc. Customize option 185 may be provided in any suitable portion of the program guide service, such as on a program guide listings page (FIG. 16).

Another option 174 that is available on local cable site page 170 (FIG. 10) is local weather option 186. Selecting local weather option 186 takes the user to local weather page 188 (FIG. 14). If desired, a map-based menu (such as shown in FIGS. 5 and 6) or other user input arrangement can be used to provide the

user with the opportunity to select additional cities for which weather information is desired.

Program guide option 190 allows the user to access television program listings that can be organized by time, channel, and category and can be searched. Selecting program guide option 190 takes the user to program guide menu page 194 (FIG. 15). Movie guide option 192 allows the user to access channel listings for premium and pay-per-view channels, interviews, and various promotional media. Selecting movie guide option 192 takes the user to movie guide menu page 196 (FIG. 23).

The user may reach program guide menu page 194 (FIG. 15) from go national option 138 (FIGS. 4 and 8) or go satellite option 140 (FIGS. 4 and 8). If the user selected go local option 136 (FIG. 4) and successfully completed registration page 162 (FIG. 9), the user may reach program guide menu page 194 (FIG. 15) by selecting program guide option 190 on local cable site page 170 (FIG. 10). The user may also reach program guide menu page 194 (FIG. 15) via select a city option 154. Each of these paths to program guide menu page 194 requires that slightly different user selections be made.

Go local option 136 (FIG. 4) requires that a user specify a particular local region (or cable system operator) of interest to reach local cable site page 170 (FIG. 10). To reach program guide menu page 194 (FIG. 15) from local cable site page 170, the user selects program guide option 190.

Go national option 138 (FIGS. 4 and 8) requires that a user select a desired time zone (e.g.,

eastern, central, mountain, or pacific). To reach program guide menu page 194 from welcome page 124 (FIG. 4) or pick again page 152 (FIG. 8), the user selects program guide option 284.

Go satellite option 140 (FIGS. 4 and 8) requires that the user select a desired satellite provider 286. To reach program guide menu page 194 from welcome page 124 (FIG. 4) or pick again page 152 (FIG. 8), the user selects program guide option 288.

Select a city option 154 (FIG. 8) requires that the user enter information specifying a particular city. When the user submits the city information by clicking on submit button 160, the user is taken to registration page 162 (FIG. 9). The user reaches program guide menu page 194 from local cable site page 170 (FIG. 10) after completing the form on registration page 162.

Regardless of which option is used to reach program guide menu page 194 (FIG. 15), information is preferably retained by the system 10 or 78 that indicates which selections have been made by the user. Retaining this information allows subsequently displayed program listings and other information to be automatically customized to reflect the user's selections.

As shown in FIG. 15, program guide menu page 194 may be constructed from two smaller web pages: top web page 198 and a bottom web page 200. Top web page 198 contains graphics and text-based options 202 that are common to many different system operators. Bottom web page 200 may contain system specific promotional materials, such as pay-per-view video promotion 204.

Dividing program guide menu page 194 in this way allows system resources to be used more efficiently than would otherwise be possible, because the common material in top web page 198 can be used for more than one local cable system.

If desired, television channel options 206 and 208 may be provided that allow the user to easily access related television channel program services. When the user selects options 206 or 208, processing unit 60 (FIG. 2) sends control commands to video unit 68 that direct tuner 70 of video unit 64 to tune to a television channel on which the desired program service is being broadcast.

For example, if the user wishes to tune video unit 64 to the Prevue® channel, the user may click on program guide television channel option 206. When program guide television channel option 206 is selected, processing unit 60 directs video unit 64 to select the appropriate television signal from television signal input 74 so that the Prevue® channel is displayed on monitor 72. The Prevue® channel is an example of a type of program guide service that displays a scrolling list of television program titles with a concurrent display of promotional videos and advertisements.

If the user wishes to tune video unit 64 to the Sneak Prevue® channel, the user may click on movie guide television channel option 208. When movie guide television channel option 208 is selected, processing unit 60 directs video unit 64 to select the appropriate television signal from television signal input 74 so that the Sneak Prevue® channel is displayed on monitor

72. The Sneak Prevue® channel is an example of a type of movie guide service that displays promotional videos of upcoming pay-per-view events and premium channel offerings.

Television channel options 206 and 208 allow user to jump directly from an Internet-based television program guide service to related program guides services provided on conventional television channels. Facilitating this type of direct link is beneficial for the user, because it allows the user to avoid the cumbersome steps of leaving the Internet-based service and manually tuning video unit 64 to the appropriate channel while attempting to remember the correct channel number of the desired television service.

Options 202 allow the user to choose how to display various program listings for the user's preselected region of interest (national, satellite, or local). Typical options 202 include by time option 210, by channel option 212, by category option 214, and search option 216.

If by time option 210 is selected, the user is presented with by time page 218, as shown in FIG. 16. By time page 218 contains program listings 220 that are organized in channel order from top to bottom and by broadcast time from left to right. In by time page 218, the programs in program listings 220 may be listed beginning with programs that are currently being broadcast. For example, if the current time is between 1:30 PM and 2:00 PM, program listings 220 may begin with programs that start at 1:30 PM. Alternatively, the programs in program listings 220 may be listed based on a predetermined time slot (e.g., morning,

afternoon, or prime time). If desired, the closest time slot to the current time may be displayed. Program listings 220 typically contain information for about two hours of programing.

Cursors 222 and 224 are used to navigate to earlier or later time periods, respectively. Web browser cursors 226 and 228 allow the user to scroll through the program listings. The user may also navigate the program listings with time navigation buttons 230. For example, if the user would like to view program listings that begin in the morning, the user clicks on the morning navigation button 230. If the user would like to view program listings for programs currently being broadcast, the user may click on the current navigation button 230. Program listings for different days in the month may be viewed by selecting the appropriate day from calendar buttons 232.

The user can chose between various available view options by selecting the appropriate time, channel, category, or search button from among view buttons 234. View buttons 234 take the user to the same web pages that are presented when the corresponding options 202 of FIG. 15 are selected. For example, by channel option 212 and channel view button 234 are both linked to by channel page 242 (FIG. 17).

Another component of by time page 218 and various other web pages provided by the present system is program information box 236. The contents of program information box 236 changes dynamically, depending on which program title in program listings 220 is selected. For example, the user has clicked on

the entry "Primal Fear" in program listings 220 of FIG. 16. As a result, the contents of program information box 236 reflect this selection. Program information box 236 typically contains the program title (e.g., Primal Fear), the running time of the program (e.g., 2:09), a brief description of the program (e.g., A hot shot ... ), and a description of the program type or genre (e.g., drama movie). The program description may contain information on the actors in the program, the director, etc. Program information box 236 typically provides a rating of the program, such as a star rating (e.g., three stars) or the Motion Picture Association of America (MPAA) rating for movies or the television rating for television programs. If the user desires to view additional information relating to the selected program, the user may click on closer look icon 238 (or alternatively, on any portion of box 236), which takes the user to program information page 240 (FIG. 30).

If desired, when programs are selected by a user that are currently being broadcast, direct tune button 231 may be displayed. When direct tune button 231 is clicked on by the user, processing unit 60 directs video unit 64 to select the appropriate television signal from television signal input 74 to display the selected program on monitor 72.

By channel page 242 of FIG. 17 is presented when the user selects by channel option 212 from program guide menu page 194 (FIG. 15) or when the user clicks on a channel view button, such as channel view button 234 of by time page 218 (FIG. 16). By channel page 242 contains channel list 244. Channel list 244

may be arranged in channel number order and may contain associated icons 246 for certain channels. A user can click on each individual channel 248 in channel list 244 to obtain a list of program information based on the selected channel. A user can also click on a graphic or text link to a listed network's web site to be hyperlinked to that site.

When a channel 248 is selected, the user is presented with channel program list page 250, as shown in FIG. 18. The selected channel in the example of FIG. 18 is channel 2. In channel program list page 250, program listings 252 for the selected channel may be arranged in time order, beginning with the current time. If programs in program listings 252 extend into the next day, the programs may be separated by date separation bar 254. Title bar 256 contains information identifying the currently selected channel.

By category page 258 of FIG. 19 is presented when the user selects by category option 214 from program guide menu page 194 (FIG. 15) or when the user clicks on a category view button, such as category view button 234 of by time page 218 (FIG. 16). By category page 258 contains category list 260, which may be presented in the form of category icons 262. A user can click an individual category icon 262 in category list 260 to obtain a list of program information based on the selected category.

When a category is selected, the user is presented with category program list page 264, as shown in FIG. 20. In category program list page 264, program listings 266 may be arranged in time and channel order, beginning with the current time and date. Program

listings 266 contain the channel information for each program adjacent to the program title. If a user wishes to view program information for a given channel, the user may click on one of the displayed channels. The user is then presented with a program list that is restricted to programs appearing on the selected channel.

If desired, the program list that is displayed in category program list page 264 may be limited to programs appearing in the next 24 hour period. The user may view information for later days by clicking on the appropriate day in calendar buttons 270.

Search page 272 of FIG. 21 is presented when the user selects search option 216 from program guide menu page 194 (FIG. 15) or when the user clicks on a search view button, such as search view button 234 in by time page 218 (FIG. 16). Search field options 274 allow the user to select a search field, such as title, actor, category, description, rating. A search text string is entered in search text box 276.

After search text has been entered in search text box 276 and one of search field options 274 has been selected, the requested search is performed (e.g., by web server 20 (FIG. 1) or web server 86 (FIG. 3)) and the user is provided with search results page 278 of FIG. 22. Search results page 278 contains program listings 280 that satisfy the search criteria specified using search page 272 (FIG. 21). For example, the program listings 280 in FIG. 22 resulted from a search for the text string "Gibson" in the actor search field, as shown by search criteria bar 282.

The user may reach movie guide menu page 196 (~~FIG.~~ 23) from go national option 138 (FIGS. 4 and 8) or go satellite option 140 (FIGS. 4 and 8). If the user selects go local option 136 (FIG. 4) and successfully completes registration page 162 (FIG. 9), the user may reach movie guide menu page 196 (FIG. 23) by selecting movie guide option 192 on local cable site page 170 (FIG. 10). Each of these paths to movie guide menu page 196 requires that slightly different user selections be made.

Go local option 136 (FIG. 4) requires that a user specify a particular local region (or cable system operator) of interest to reach local cable site page 170 (FIG. 10). To reach movie guide menu page 196 (FIG. 23) from local cable site page 170, the user selects movie guide option 192.

Go national option 138 (FIGS. 4 and 8) requires that a user select a desired time zone (e.g., eastern, central, mountain, or pacific). To reach movie guide menu page 196 from welcome page 124 (FIG. 4) or pick again page 152 (FIG. 8), the user selects movie guide option 290.

Go satellite option 140 (FIGS. 4 and 8) requires that the user select a desired satellite provider 286. To reach movie guide menu page 196 from welcome page 124 (FIG. 4) or pick again page 152 (FIG. 8), the user selects movie guide option 292.

Regardless of which option is used to reach movie guide menu page 196, information is preferably retained by the system 10 or 78 that indicates which selections have been made by the user. Retaining this information allows subsequently displayed program

listings and other information to be automatically customized to reflect the user's selections.

As shown in FIG. 23, movie guide menu page 196 contains hot picks option 294, movie cruiser option 296, main event option 298, and interview option 300. When the user selects one of these options by clicking on the associated icon, the user is presented with a corresponding web page for that feature.

If the user selects hot picks option 294, the user is provided with hot picks page 302, as shown in FIG. 24. Hot picks page 302 contains images 304, 306, 308, and 310 of popular programs for which promotional materials are available. Images 304 and 308 typically contain program titles. Images 306 and 310 typically contain actor stills. The programs for which images 304, 306, 308, and 310 are displayed may be automatically selected in accordance with their upcoming frequency on the pay-per-view services. The upcoming frequency may be calculated based on the number of expected occurrences of a given program in a predetermined period of time (e.g., seven days). The predetermined period may be commenced starting with the current date and time, thereby allowing for a seamless crossing of the monthly barrier. The information used to determine which program images are displayed is preferably customized based on the selections (local, national, satellite, etc.) previously made by the user.

When the user clicks on one of images 304, 306, 308, or 310, the user is taken to program information page 240 (FIG. 30), which allows the user to obtain additional information, such as video clips and interview segments on the selected program. When a

user clicks on pay-per-view link 312 or pay-per-view link 314, the user is taken to pay-per view page 316 (FIG. 26), which provides the user with pay-per-view program listings for the selected program.

When the user selects movie cruiser option 296, the user is presented with movie cruiser page 318, as shown in FIG. 25. Movie cruiser page 318 lists the pay-per-view and premium channels that are available to the user (based on previous selections). In particular, movie cruiser page 318 contains pay-per-view channel options 320 and premium channel options 322.

If the user selects one of pay-per-view options 320, the user is taken to pay-per-view page 316, as shown in FIG. 26. Pay-per-view page 316 contains program listings 324 for pay-per-view events. Multiple pay-per-view programs may be simultaneously listed in a grid format or may be listed as shown in FIG. 26 for a selected pay-per-view channel (i.e., channel 35). As with several other pages, page 316 contains program information box 325, which contains program information when a program from program listings 324 has been selected by the user. Clicking on box 325 (or a closer look icon in box 325) takes the user to program information page 240 (FIG. 30).

If the user selects one of premium channel options 322 on page 318 (FIG. 25), the user is taken to premium services page 326, as shown in FIG. 27. Premium services page 326 contains program listings 328 for premium events. Multiple premium service programs may be simultaneously listed in a grid format or a single program may be listed as shown in FIG. 27 for a

selected premium service (i.e., the Disney® channel). Program information box 330 provides program information for a program that has been selected by the user. In the example of FIG. 27, the user has clicked on "Pete's Dragon." Clicking on program information box 330 (or a closer look icon in box 330) takes the user to program information page 240 (FIG. 30), where the user can view additional information on the selected program (i.e., information on the movie Pete's Dragon).

When the user selects main event option 298 from movie guide menu page 196 (FIG. 23), the user is presented with main event page 332, as shown in FIG. 28. Main event page 332 lists premium or pay-per-view sports events and other special events. By clicking on an event (e.g., event 334), the user may be presented with an associated program information page (such as page 240 of FIG. 30), provided that additional information on the event is available. Alternatively, the user may be directly presented with pay-per-view order page 336 (FIG. 31).

When the user selects interview option 300 from movie guide menu page 196 (FIG. 23), the user is presented with interview page 338, as shown in FIG. 29. Interview page 338 contains still images 340 of various subjects. As with other pages in the Internet program guide service, the subjects presented on interview page 338 are customized to reflect the user's selected type of service (e.g., the user's selection of a particular cable system operator or the user's selection of national service or a particular satellite service). Accordingly, images 340 relate to interviews for the

movies and other programs currently available to the user. The determination of which interview images 340 are to be made available on interview page 338 may be based on a calculation of the most frequently scheduled upcoming programs in a predetermined time period (e.g., in the upcoming week). If desired, interviews corresponding to programs not currently available to the user may also be provided. The user may select a given interview by clicking on one of images 340. The user is then taken to program information page 240 (FIG. 30).

As shown in FIG. 30, program information page 240 contains detailed information on a selected program (e.g., the movie Birdcage). Program information page 240 preferably contains image 342, which may initially be presented as a still image of the program title (e.g., from a JPEG or GIF file). When a user clicks on image 342, an associated video clip is presented. Program information page 240 also contains title 344, actor information 346, and program description 348. Additional information may include content information 350 and genre information 352. If desired, information may be provided on the director, year of release, and other relevant items. Additional actor information may be supplied (e.g., in the form of biographical information and related video clips accessed by clicking on actors 346).

Interview icon 354, commentary icon 356, and promotional clip icon 358 represent available services. The user can view video clips of interviews on the selected program (i.e., the movie Birdcage) by clicking on the appropriate file-type option associated with a

given service. For example, file options 360, 362, and 364 are associated with an interview service (represented by interview icon 354). Clicking on file option 360 allows the user to view interview video clips using a protocol appropriate for an MOV file (e.g., using the QuickTime application). Clicking on file option 362 or 364 allows the user to view interview video clip using a protocol appropriate for an AVI or MPG (MPEG) file (e.g., using the ActiveMovie application). Commentary icon 356 and promotional clip icon 358 have associated file options (e.g., MOV, AVI, and MPG options) that allow the user to view commentary or promotional video clips for the selected program.

Program information page 240 contains information tied to the program selected by the user on previous pages. The user may reach program information page 240 by various paths. For example, the user may select a program from program listings 220 in by time page 218 (FIG. 16) by clicking on the desired program title. The user may also select a pay-per-view or premium program from pay-per-view page 316 (FIG. 26) or premium services page 326 (FIG. 27) by clicking on the appropriate listing. When the user reaches program information page 240, program information is provided for the selected program. Icons and other indicators are used to identify which services are available for the selected program. For example, if no commentary video clips are available for a given program, then the file options below commentary icon 356 may be omitted. Similarly, if no video still is available for a movie, image 342 can be omitted.

Program information page 240 contains program listings 366, which provide program title, channel, and time and date information for the selected program. In the example shown in FIG. 30, the movie Birdcage is appearing on channel 35 (a pay-per-view channel) on three days in the next weekly period. When the user clicks on a pay-per-view entry in program listings 366, the user is taken to order page 336 (FIG. 31).

As shown in FIG. 31, order page 336 contains instructions 368 on how to order a pay-per-view event. Order page 336 also contains telephone number query box 370 and personal identification number box 372. The user may place an order for a pay-per-view event by clicking on place order button 374. Information entered by the user into boxes 370 and 372 is used to verify the user's identity and account status. Once the user's information has been verified, the selected pay-per-view event may be delivered to the user's multimedia system.

The way in which pay-per-view event orders are processed depends on the particular hardware used to deliver services to the user. Order and account verification information is generally electronically submitted to the headend cable system operator or a third party order fulfillment processor linked to the headend system. Equipment in the headend processes the order automatically and arranges for the delivery of the pay-per-view event to the user. Typically, the headend equipment directs equipment (such as a set-top box or similar integrated component) in the user's multimedia system to display the ordered event.

In system 78 of FIG. 3, web server 86 at cable system headend 88 may be used to receive and process pay-per-view orders submitted using order page 336. After processing the order, web server 86 can direct conventional pay-per-view equipment at headend 88 to authorize the display of the ordered pay-per-view event using set-top box 116.

Similar techniques for delivering pay-per-view events may be used with other hardware arrangements such as those shown in FIGS. 1-3. If desired, after web server 86 has processed the user's pay-per-view order, web server 86 can communicate authorization information to processing unit 60 (FIG. 2) in the user's multimedia system 58 (FIG. 2). Processing unit 60 (FIG. 2) can direct video unit 64 (FIG. 2) to decode and display the pay-per view event from among the received television signals 74 (FIG. 2) based on the authorization information.

Order page 336 can be provided with user-selectable options for recording programs and for reminding the user when selected programs are about to be broadcast. For example, order page 336 may contain a clickable record button. Selecting the record option by clicking on the record button directs multimedia system 58 (FIG. 2) to record the selected program (by controlling recording unit 68 of video unit 64 with processing unit 60) when the selected program is being aired. Similarly, order page 336 may contain a clickable reminder button. Selecting the reminder option by clicking on this button directs multimedia system 58 to remind the user of the upcoming selected program (e.g., 10 minutes before the scheduled

broadcast time) by automatically tuning to the desired channel, by displaying a reminder message, or by issuing an audible reminder. Reminder messages may also be generated by web server 20 or 86 and transmitted to multimedia system 58 by e-mail.

If desired, these selectable recording and reminder features can be incorporated into other pages, such as program information page 240, one of the pages containing television program listings, or a page presented to the user after clicking on place order button 374.

When a user clicks on an advertisement (typically an image) in one of the web pages associated with the program guide service, the user may be taken directly to a more detailed advertisement page. Alternatively, the user may be taken to advertiser showcase page 376, as shown in FIG. 32. Advertiser showcase page 376 contains clickable images, such as images 378, 380, and 382, which are linked to more detailed advertising pages. Advertiser showcase page 376 also may contain a advertiser logo image, such as image 390. Text bar 392 contains clickable text fields that duplicate the selections available by clicking on images.

The advertiser logo image in advertiser showcase page 376 may be linked to the web site of the advertiser. For example, image 390 may be linked to a web site for UPN, so that if the user clicks on image 390, the user will be taken to the UPN web site.

If the user clicks on an image such as images 378, 380, or 382 in advertiser showcase page 376, the user is presented with advertisement page 394, as shown

in FIG. 33. Advertisement page 394 contains detailed information related to the subject matter of the image that was selected from advertiser showcase page 376 (FIG. 32). In the example of FIG. 33, additional information is provided on the program "The Sentinel," because this program was selected in advertising showcase page 376 by clicking on image 382. If desired, advertisement page 394 can contain appropriate links to further advertisement pages or to the advertiser's home page.

FIG. 34 is a site map of the television program guide service. The service can be accessed from service provider home page 396. Selecting the television program guide service from home page 396 takes the user to welcome page 124. If the user selects the go local option and no service is available, no service page 150 and pick again page 152 are presented. If the user selects the go local option and service is available, the user is taken to registration page 162. If maps 146 (FIG. 5) and 148 (FIG. 6) are used to define the local area of interest, the maps may be provided in path 398 between welcome page 124 and registration page 162.

Selecting an advertisement by clicking on its image may typically be done on any page containing an advertisement. In the example of FIG. 34, selecting an advertisement on registration page 162 takes the user to advertiser showcase page 376. Selecting an image on advertiser showcase page 376 takes the user to advertisement page 394.

Completing the registration form on registration page 162 allows the user to proceed to

local cable site page 170. From local cable site page 170, the user can view community events page 178 by selecting the community events option. By selecting the cable feedback option, the cable operator option, or the local weather option, the user can access cable feedback page 182, cable operator page 186, or local weather page 188.

If the user selects the go national option on welcome page 124, the user is taken to program guide menu page 194 or movie guide menu page 196, depending on whether the user selected the program guide or movie guide option. Similarly, if the user selects the go satellite option on welcome page 124, the user is taken to program guide menu page 194 or movie guide menu page 196, depending on whether the user selected the program guide or movie guide option. The user can also reach program guide menu page 194 or movie guide menu page 196 from pick again page 152 or local cable site page 170. If the user reaches program guide menu page 194 from either pick again page 152 or local cable site page 170, the local area of interest to the user is retained by the system, so that subsequently displayed program guide listings can be customized to the user's local area.

When the user is at program guide menu page 194, selecting the program guide channel option tunes the system directly to program guide television channel 400. Similarly, selecting the movie guide channel option tunes the system to movie guide television channel 402. Selecting the time option from program guide menu page 194 takes the user to by time page 218. If a program is selected that is currently being

broadcast and is therefore available for the user to view, a direct tune option may be displayed on by time page 218 or any page containing program listings. Selecting the direct tune option tunes the user's television unit directly to selected television channel 404.

Selecting the channel option from program guide menu page 194 takes the user to by channel page 242. When the user selects a desired channel, channel program list page 250 is displayed. Selecting the category option from program guide menu page 194 takes the user to by category page 258. When the user selects a desired category, category program list page 264 is displayed.

When the user at program guide menu page 194 selects the search option, search page 272 is presented. Search page 272 allows the user to enter search terms and to initiate a search of a program database. After the search is performed, search results page 278 is displayed.

Selecting the movie guide option from welcome page 124, pick again page 152, or local cable site page 170 presents the user with movie guide menu page 196. If the user selects the interview option, the user is presented with interview page 338. When the user selects an interview from interview page 338, the user is taken to program information page 240 to view the interview. If the user selects the hot picks option from movie guide menu page 196, the user is presented with hot picks page 302. When the user selects a hot pick from the displayed images on hot picks page 302, the user is taken to program information page 240 to

view a promotional video clip for the hot pick. If the user selects the main event option from movie guide menu page 196, the user is presented with main event page 332. When the user selects a given event from main events page 332, the user is taken to program information page 240 to view information on that event. Alternatively, the user may be taken to order page 316 to place an order for the event.

Selecting the movie cruiser option from movie guide menu page 196 presents the user with movie cruiser page 318. The user can view pay-per-view page 316 by selecting the pay-per-view option. The user can view premium services page 326 by selecting the premium option. Programs may be selected by the user from either pay-per-view page 316 or premium services page 326. In either case, the user is taken to program information page 240 to view additional information on the selected program.

Program information page 240 allows the user to view multimedia material on a given program, interview, event, etc. The content of program information page 240 depends on the path taken to reach program information page 240 and the options selected by the user. Program information page 240 contains options that allow the user to select a program to view. When the user makes such a program selection, the user is presented with order page 336.

The foregoing is merely illustrative of the principles of this invention and various modifications can be made by those skilled in the art without departing from the scope and spirit of the invention.

What is Claimed is:

1. An Internet television program guide system for providing web pages of information to a user at a multimedia system over an Internet communications link, comprising:

a computer system for providing television program listings; and

a web server for receiving the television program listings from the computer system, wherein the web server provides the program listings to the multimedia system over the Internet communications link when the user accesses the television program listings with the multimedia system.

2. The system defined in claim 1 wherein the computer system further comprises means for providing multimedia material associated with the television program listings to the web server.

3. The system defined in claim 2 wherein the means for providing multimedia material comprises means for providing promotional video clips.

4. The system defined in claim 2 wherein the means for providing multimedia material comprises means for providing interview video segments.

5. The system defined in claim 1 further comprising means for providing a go national option which the user selects to receive information based on national television listings.

6. The system defined in claim 1 further comprising means for providing a go satellite option which the user selects to receive information based on television listings for satellite coverage.

7. The system defined in claim 1 further comprising means for providing a go local option which the user selects to receive information based on local television listings.

8. The system defined in claim 7 further comprising means for selecting a locality for the local television listings.

9. The system defined in claim 8 wherein the means for selecting a locality comprises means for accepting a zip code from which the locality is determined.

10. The system defined in claim 8 wherein the means for selecting a locality comprises means for selecting a local region from a map.

11. The system defined in claim 8 further comprising means for presenting a pick again web page when television program listings are not available for the selected locality.

12. The system defined in claim 1 further comprising means for presenting web pages containing advertising images that the user selects.

13. The system defined in claim 1 further comprising means for presenting a web page having a record option for using the multimedia system to record a television program selected from the television program listings.

14. The system defined in claim 1 further comprising:

means for providing a program guide option; and

means for presenting a program guide menu web page when the user selects the program guide option.

15. The system defined in claim 1 further comprising:

means for providing a movie guide option; and

means for presenting a movie guide menu web page when the user selects the movie guide option.

16. The system defined in claim 1 further comprising:

means for providing a guide television channel option; and

means for tuning the multimedia system to a guide television channel when the user selects the guide option.

17. The system defined in claim 1 further comprising:

means for providing a direct tune option when a selected program is currently being broadcast; and

means for tuning the multimedia system to the television channel for the selected program when the user selects the direct tune option.

18. The system defined in claim 1 further comprising means for providing a selectable option to arrange the television program listings by time.

19. The system defined in claim 1 further comprising means for providing a selectable option to arrange the television program listings by channel.

20. The system defined in claim 1 further comprising means for providing a selectable option to arrange the television program listings by category.

21. The system defined in claim 1 further comprising means for searching the television program listings.

22. The system defined in claim 21 further comprising means for searching the television program listings by title.

23. The system defined in claim 21 further comprising means for searching the television program listings by actor.

24. The system defined in claim 21 further comprising means for searching the television program listings by category.

25. The system defined in claim 21 further comprising means for searching the television program listings by description.

26. The system defined in claim 21 further comprising means for searching the television program listings by rating.

27. The system defined in claim 1 further comprising means for displaying interview segments selected by the user.

28. The system defined in claim 27 further comprising means for providing an interview web page containing selectable interview images for interview segments that are available.

29. The system defined in claim 1 further comprising means for displaying promotional media clips selected by the user.

30. The system defined in claim 29 further comprising means for providing a hot picks web page containing selectable hot picks images for promotional media clips that are available.

31. The system defined in claim 1 further comprising means for providing a movie cruiser web page

containing selectable pay-per-view channels and premium channels.

32. The system define in claim 31 further comprising means for providing a pay-per-view web page containing program listings for upcoming pay-per-view events for a pay-per-view channel selected by the user.

33. The system defined in claim 31 further comprising means for providing a premium services web page containing program listings for upcoming premium programs for a premium channel selected by the user.

34. The system defined in claim 1 further comprising means for providing an order web page.

35. The system defined in claim 1 further comprising means for providing a customization web page.

36. The system defined in claim 1 further comprising means for providing a program information web page.

37. The system defined in claim 36 wherein the program information web page is customized to reflect information for a television program selected by the user.

38. The system defined in claim 1 wherein the computer system comprises a media library.

39. The system defined in claim 1 further comprising a satellite transmission link between the computer system and the server.

40. The system defined in claim 1 wherein:

the Internet communications link comprises a telephone line; and

the web server provides the web pages to the multimedia system over the telephone line.

41. A method for providing web pages of information to a user at a multimedia system over an Internet communications link using an Internet television program guide system having a computer system and a web server, the method comprising the steps of:

providing television program listings with the computer system;

receiving the television program listings from the computer system with the web server; and

providing the television program listings to the multimedia system over the Internet communications link with the web server, so that the user can access the television program listings.

42. The method defined in claim 41 further comprising the step of providing multimedia material associated with the television program listings to the web server with the computer system.

43. The method defined in claim 42 wherein the step of providing multimedia material further comprises the step of providing promotional video clips to the web server with the computer system.

44. The method defined in claim 42 wherein the step of providing multimedia material further comprises the step of providing interview video segments to the web server with the computer system.

45. The method defined in claim 41 further comprising the step of providing a go national option which the user selects to receive information based on national television listings.

46. The method defined in claim 41 further comprising the step of providing a go satellite option which the user selects to receive information based on television listings for satellite coverage.

47. The method defined in claim 41 further comprising the step of providing a go local option which the user selects to receive information based on local television listings.

48. The method defined in claim 47 further comprising the step of selecting a locality for the local television listings.

49. The method defined in claim 48 wherein the step of selecting a locality comprises the step of

accepting a zip code from which the locality is determined.

50. The method defined in claim 48 wherein the step of selecting a locality comprises the step of selecting a local region from a map.

51. The method defined in claim 48 further comprising the step of presenting a pick again web page when television program listings are not available for the selected locality.

52. The method defined in claim 1 further comprising the step of presenting web pages containing advertising images that the user selects.

53. The method defined in claim 52 further comprising the step of presenting a web page having a record option for using the multimedia system to record a television program selected from the television program listings.

54. The method defined in claim 41 further comprising the steps of:

providing a program guide option; and

presenting a program guide menu web page when the user selects the program guide option.

55. The method defined in claim 41 further comprising the steps of:

providing a movie guide option; and

presenting a movie guide menu web page when the user selects the movie guide option.

56. The method defined in claim 41 further comprising the steps of:

providing a guide television channel option; and

tuning the multimedia system to a guide television channel when the user selects the guide option.

57. The method defined in claim 41 further comprising the steps of:

providing a direct tune option when a selected program is currently being broadcast; and

tuning the multimedia system to the television channel for the selected program when the user selects the direct tune option.

58. The method defined in claim 41 further comprising the step of providing a selectable option to arrange the television program listings by time.

59. The method defined in claim 41 further comprising the step of providing a selectable option to arrange the television program listings by channel.

60. The method defined in claim 41 further comprising the step of providing a selectable option to arrange the television program listings by category.

61. The method defined in claim 41 further comprising the step of searching the television program listings.

62. The method defined in claim 61 further comprising the step of searching the television program listings by title.

63. The method defined in claim 61 further comprising the step of searching the television program listings by actor.

64. The method defined in claim 61 further comprising the step of searching the television program listings by category.

65. The method defined in claim 61 further comprising the step of searching the television program listings by description.

66. The method defined in claim 61 further comprising the step of searching the television program listings by rating.

67. The method defined in claim 41 further comprising the step of displaying interview segments selected by the user.

68. The method defined in claim 67 further comprising the step of providing an interview web page containing selectable interview images for interview segments that are available.

69. The method defined in claim 41 further comprising the step of displaying promotional media clips selected by the user.

70. The method defined in claim 69 further comprising the step of providing a hot picks web page containing selectable hot picks images for promotional media clips that are available.

71. The method defined in claim 41 further comprising the step of providing a movie cruiser web page containing selectable pay-per-view channels and premium channels.

72. The method define in claim 71 further comprising the step of providing a pay-per-view web page containing program listings for upcoming pay-per-view events for a pay-per-view channel selected by the user.

73. The method defined in claim 71 further comprising the step of providing a premium services web page containing program listings for upcoming premium programs for a premium channel selected by the user.

74. The method defined in claim 41 further comprising the step of providing an order web page.

75. The method defined in claim 41 further comprising the step of providing a customization web page.

76. The method defined in claim 41 further comprising the step of providing a program information web page.

77. The method defined in claim 76 wherein the program information web page is customized to reflect information for a television program selected by the user.

78. The method defined in claim 41 further comprises the step of providing the television program listings to the web server with a media library.

79. The method defined in claim 41 further comprising the step of providing the television program listings to the web server with a satellite transmission link between the computer system and the web server.

80. The method defined in claim 41 wherein the Internet communications link comprises a telephone line, the method further comprising the step of providing web pages to the multimedia system over the telephone line.

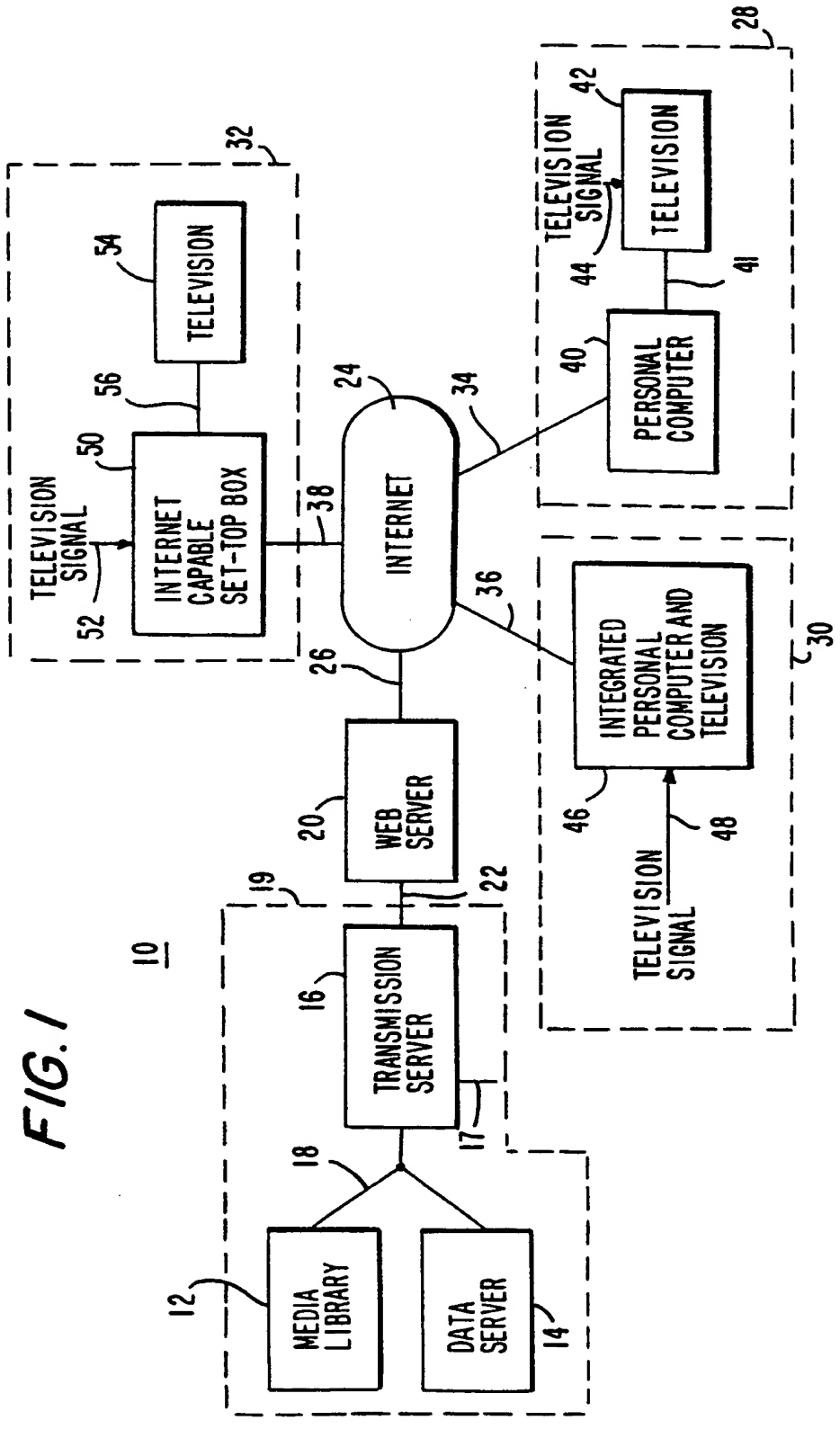
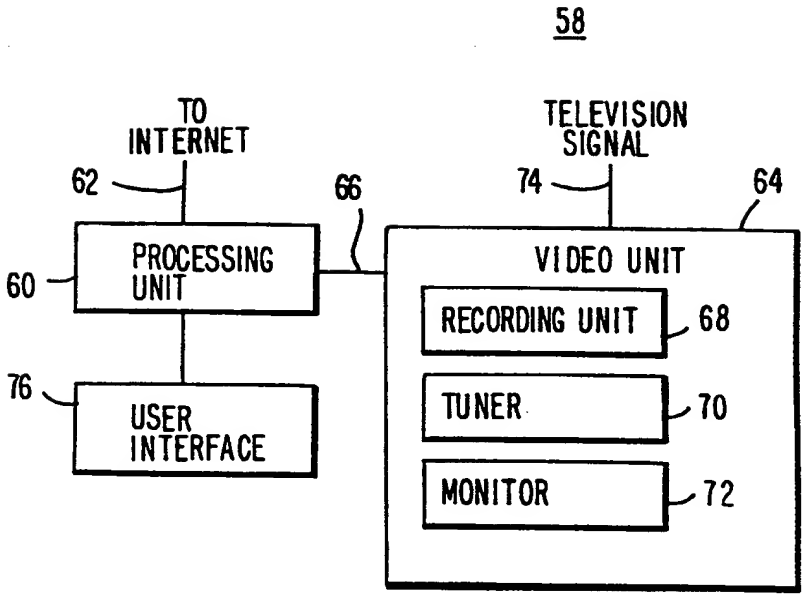

10
12
MEDIA LIBRARY
14
DATA SERVER
16
TRANSMISSION SERVER
17
18
19
20
WEB SERVER
22
24
INTERNET
26
28
30
32
34
36
38
40
PERSONAL COMPUTER
41
42
TELEVISION
44
TELEVISION SIGNAL
46
INTEGRATED PERSONAL COMPUTER AND TELEVISION
48
TELEVISION SIGNAL
50
INTERNET CAPABLE SET-TOP BOX
52
TELEVISION SIGNAL
54
TELEVISION
56

FIG. 1

FIG. 2


58
TO INTERNET
62
66
TELEVISION SIGNAL
74
64
PROCESSING UNIT
60
VIDEO UNIT
RECORDING UNIT
68
TUNER
70
MONITOR
72
76
USER INTERFACE

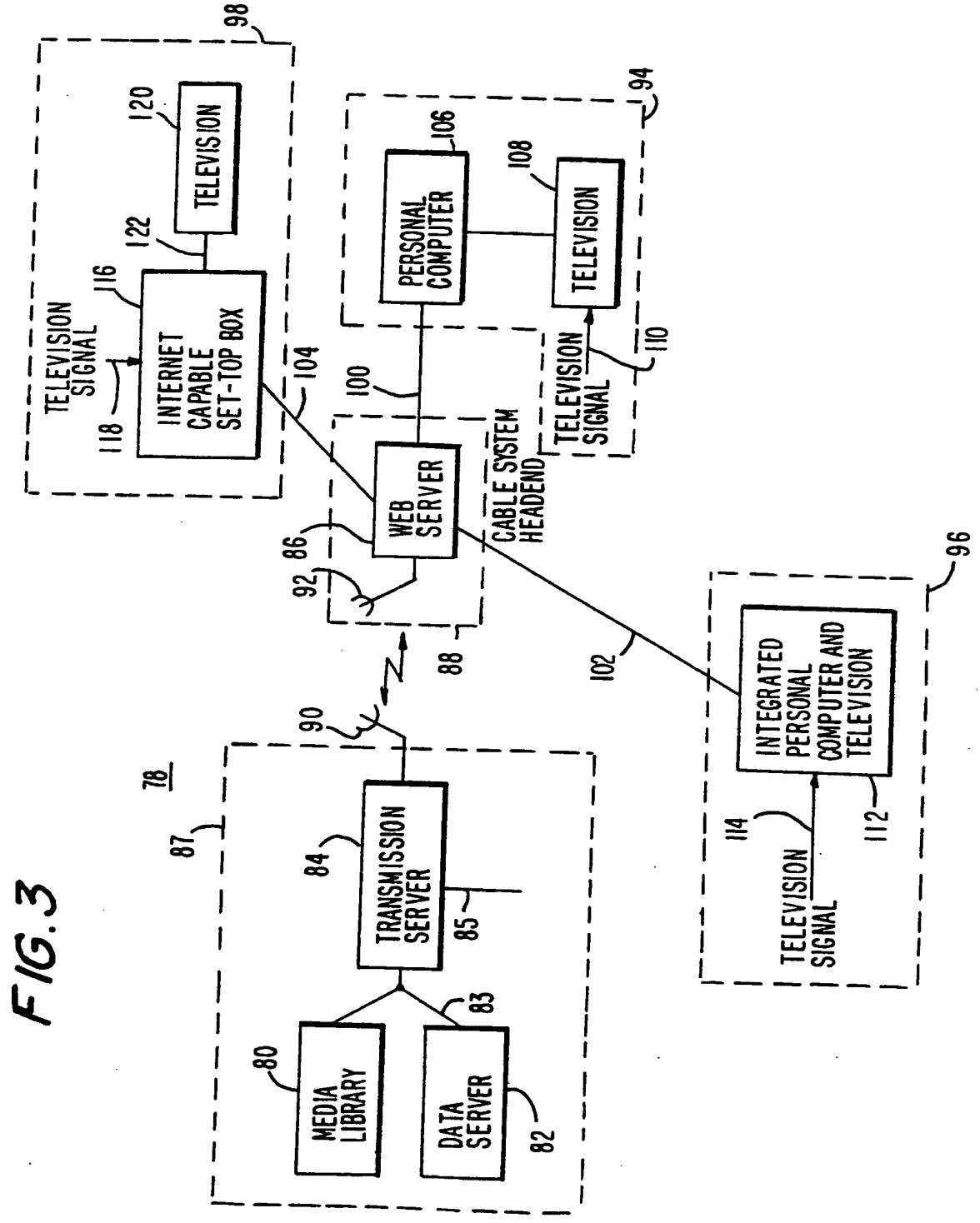

78
87
MEDIA LIBRARY
80
DATA SERVER
82
83
TRANSMISSION SERVER
84
85
90
88
92
WEB SERVER
86
CABLE SYSTEM HEADEND
100
102
104
INTERNET CAPABLE SET-TOP BOX
116
TELEVISION SIGNAL
118
TELEVISION
120
122
98
PERSONAL COMPUTER
106
TELEVISION
108
TELEVISION SIGNAL
110
94
INTEGRATED PERSONAL COMPUTER AND TELEVISION
112
TELEVISION SIGNAL
114
96

FIG. 3

FIG.4

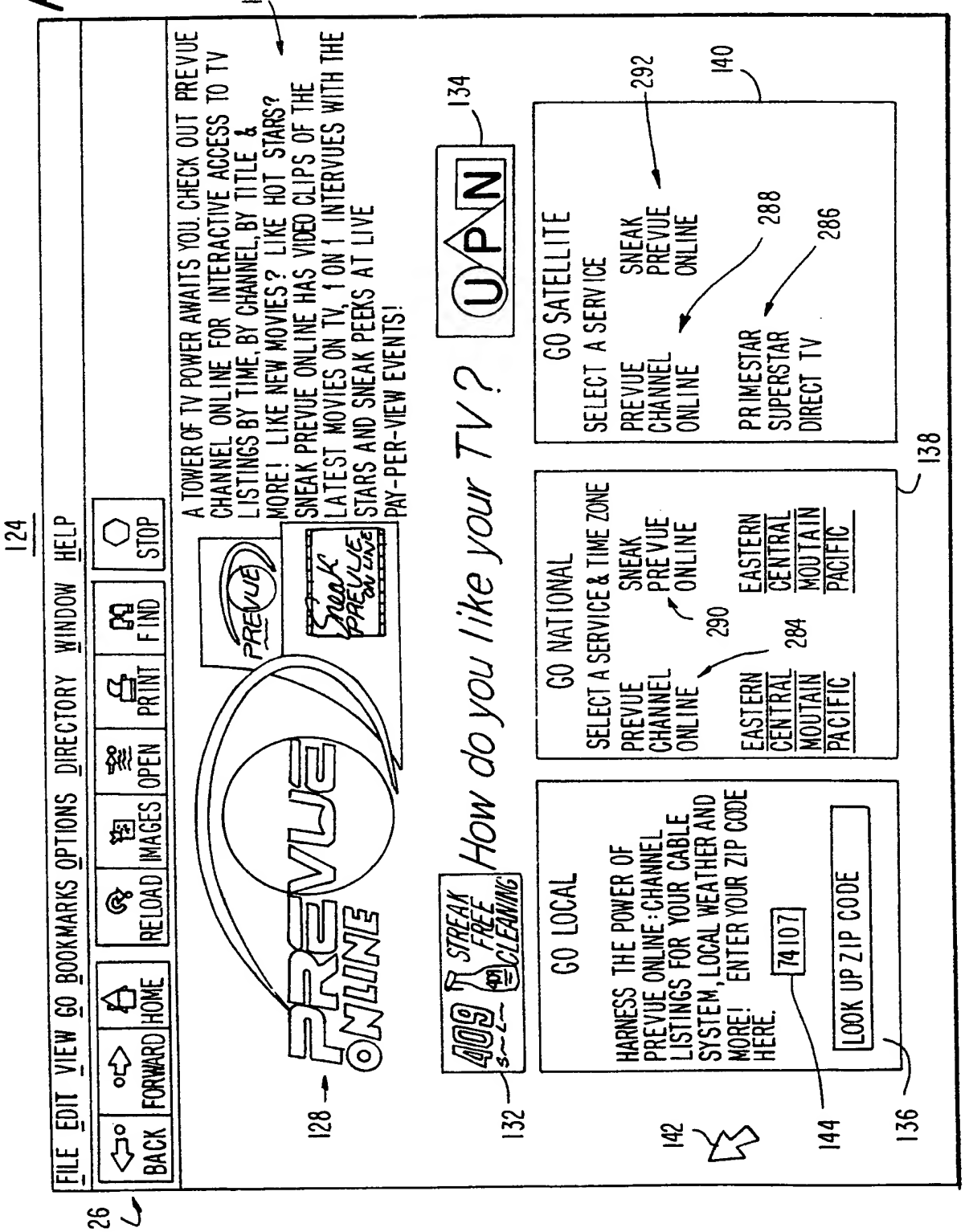

124
126
FILE EDIT VIEW GO BOOKMARKS OPTIONS DIRECTORY WINDOW HELP
BACK
FORWARD
HOME
RELOAD
IMAGES
OPEN
PRINT
FIND
STOP
130
A TOWER OF TV POWER AWAITS YOU. CHECK OUT PREVUE CHANNEL ONLINE FOR INTERACTIVE ACCESS TO TV LISTINGS BY TIME, BY CHANNEL, BY TITLE & MORE! LIKE NEW MOVIES? LIKE HOT STARS? SNEAK PREVUE ONLINE HAS VIDEO CLIPS OF THE LATEST MOVIES ON TV, 1 ON 1 INTERVIUES WITH THE STARS AND SNEAK PEEKS AT LIVE PAY-PER-VIEW EVENTS!
PREVUE
Sneak PREVUE ONLINE
128
PREVUE ONLINE
How do you like your TV?
134
UPN
132
STREAK FREE CLEANING
GO LOCAL
HARNESS THE POWER OF PREVUE ONLINE: CHANNEL LISTINGS FOR YOUR CABLE SYSTEM, LOCAL WEATHER AND MORE! ENTER YOUR ZIP CODE HERE.
74107
LOOK UP ZIP CODE
142
144
136
GO NATIONAL
SELECT A SERVICE & TIME ZONE
PREVUE CHANNEL ONLINE
290
SNEAK PREVUE ONLINE
EASTERN
CENTRAL
MOUTAIN
PACIFIC
284
138
GO SATELLITE
SELECT A SERVICE
PREVUE CHANNEL ONLINE
292
SNEAK PREVUE ONLINE
288
PRIMESTAR
SUPERSTAR
DIRECT TV
286
140

FIG.5

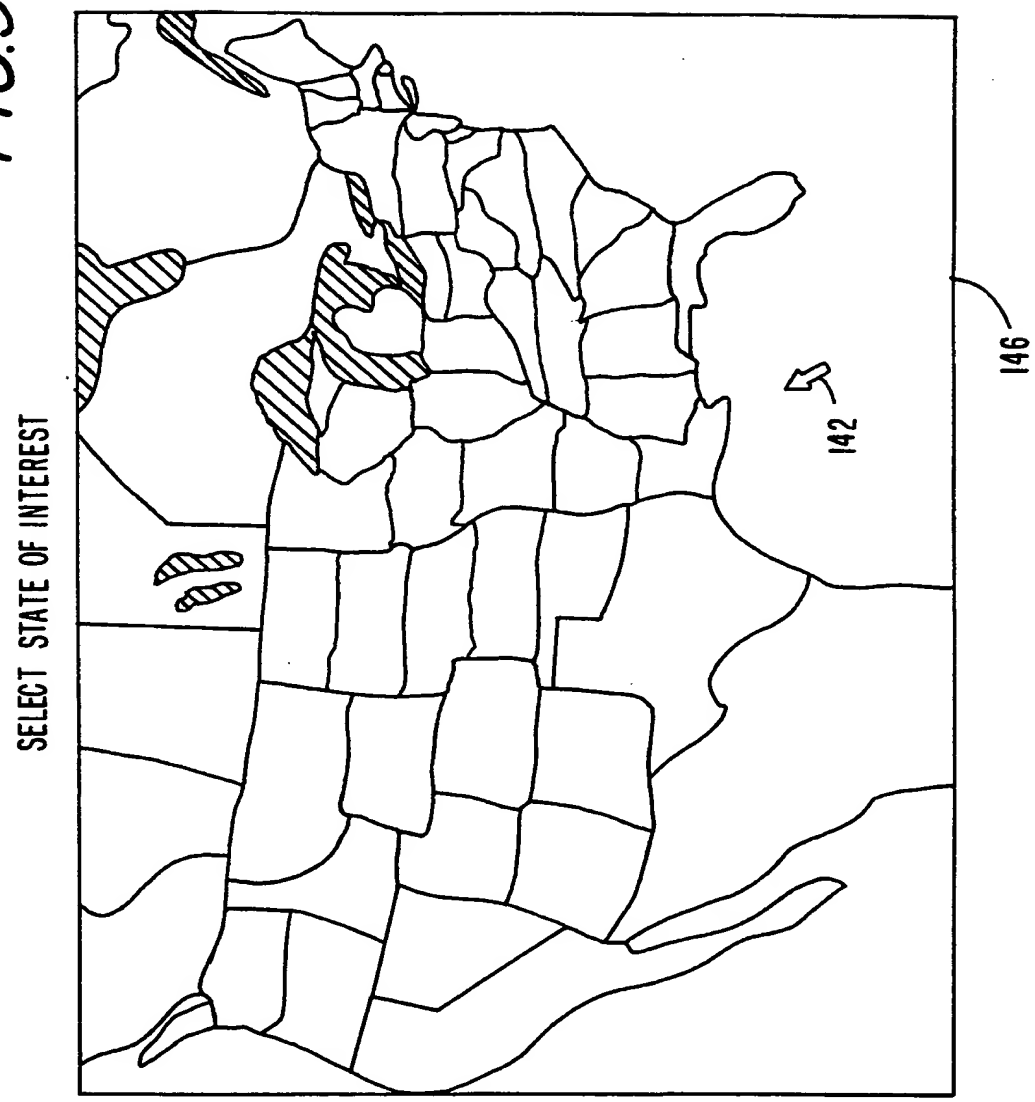


FIG.6

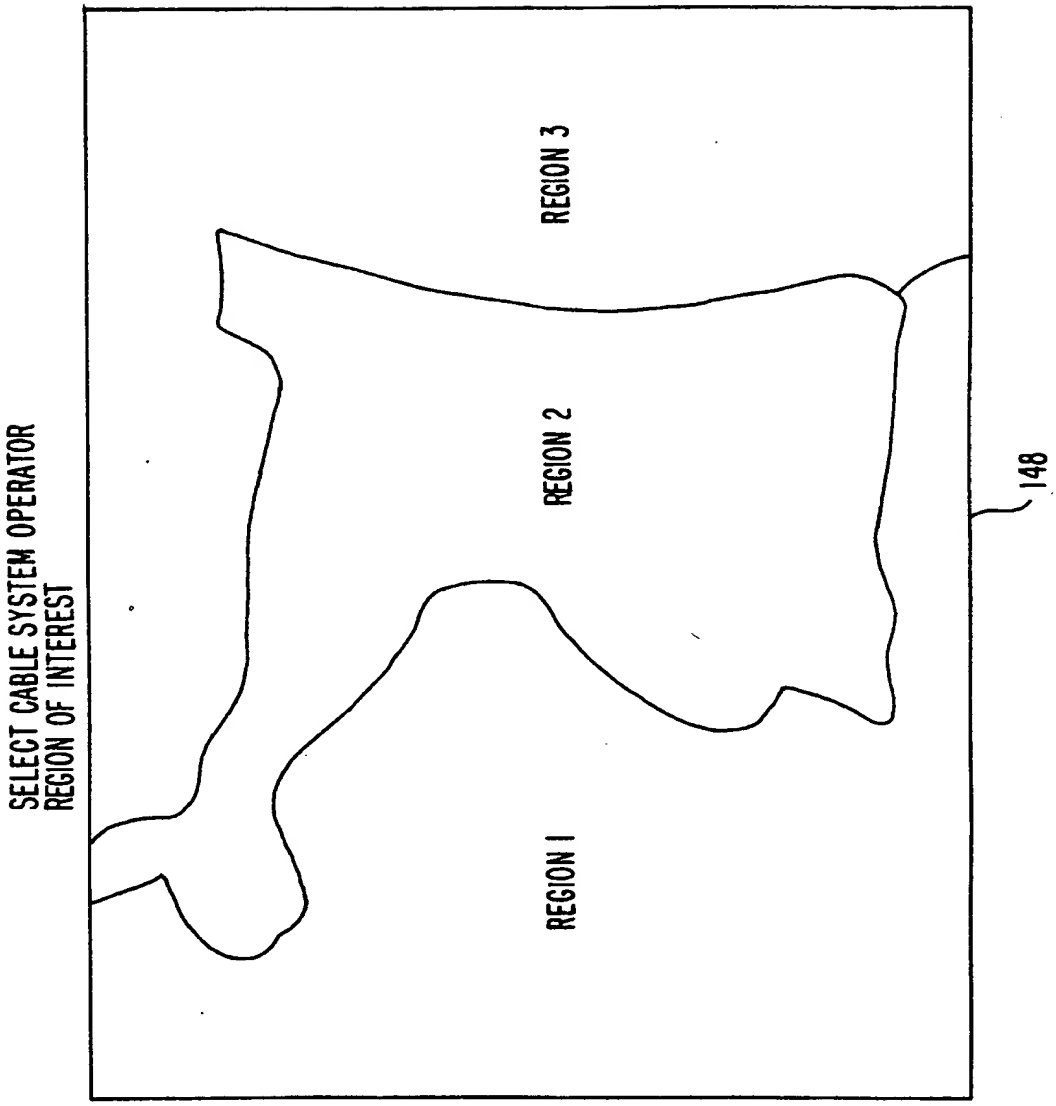

SELECT CABLE SYSTEM OPERATOR
REGION OF INTEREST
REGION 3
REGION 2
REGION 1
148

FIG. 7

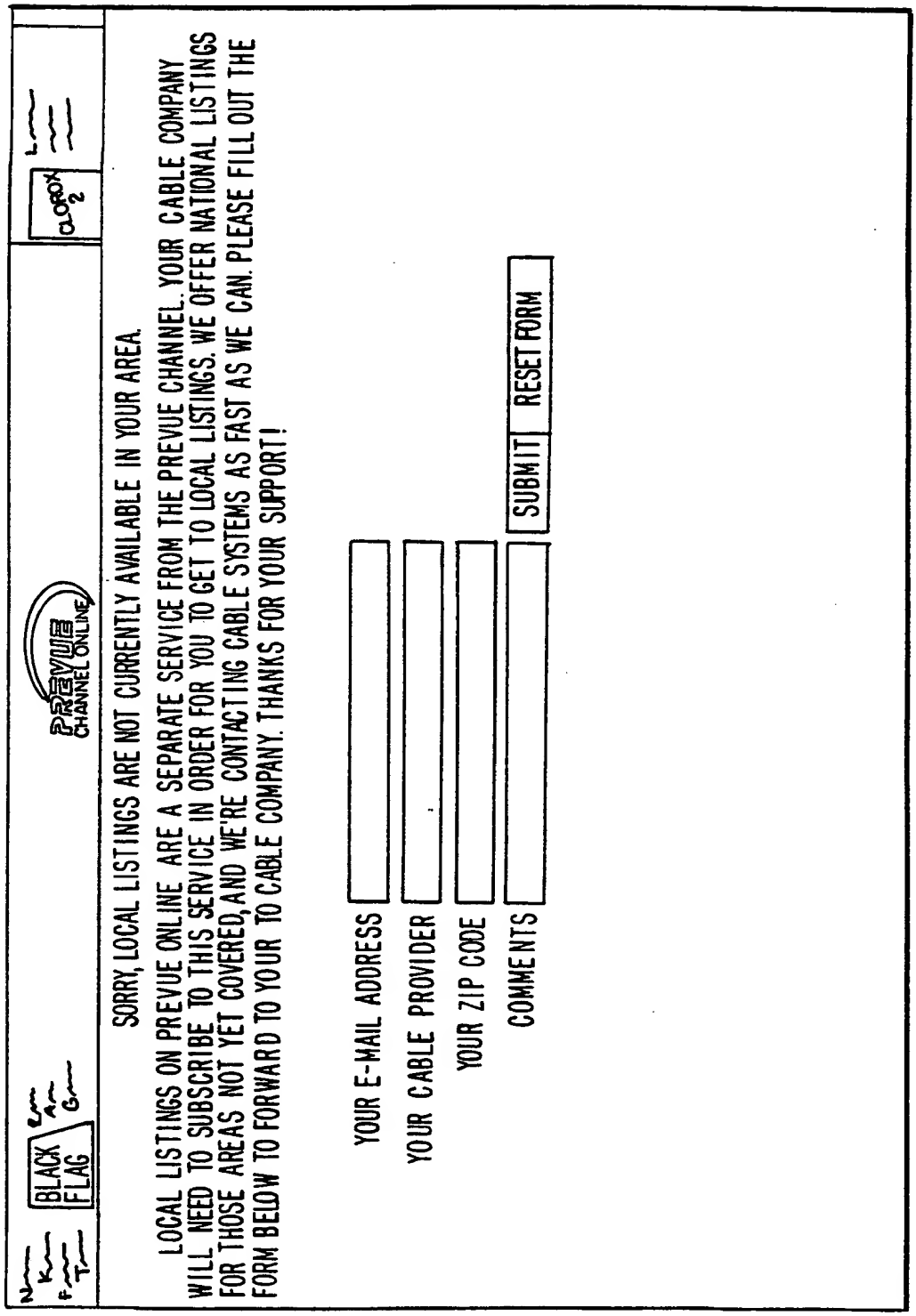

150
BLACK FLAG
PREVUE CHANNEL ONLINE
CLOROX 2
SORRY, LOCAL LISTINGS ARE NOT CURRENTLY AVAILABLE IN YOUR AREA.
LOCAL LISTINGS ON PREVUE ONLINE ARE A SEPARATE SERVICE FROM THE PREVUE CHANNEL. YOUR CABLE COMPANY WILL NEED TO SUBSCRIBE TO THIS SERVICE IN ORDER FOR YOU TO GET TO LOCAL LISTINGS. WE OFFER NATIONAL LISTINGS FOR THOSE AREAS NOT YET COVERED, AND WE'RE CONTACTING CABLE SYSTEMS AS FAST AS WE CAN. PLEASE FILL OUT THE FORM BELOW TO FORWARD TO YOUR TO CABLE COMPANY. THANKS FOR YOUR SUPPORT!
YOUR E-MAIL ADDRESS
YOUR CABLE PROVIDER
YOUR ZIP CODE
COMMENTS
SUBMIT
RESET FORM

FIG. 8

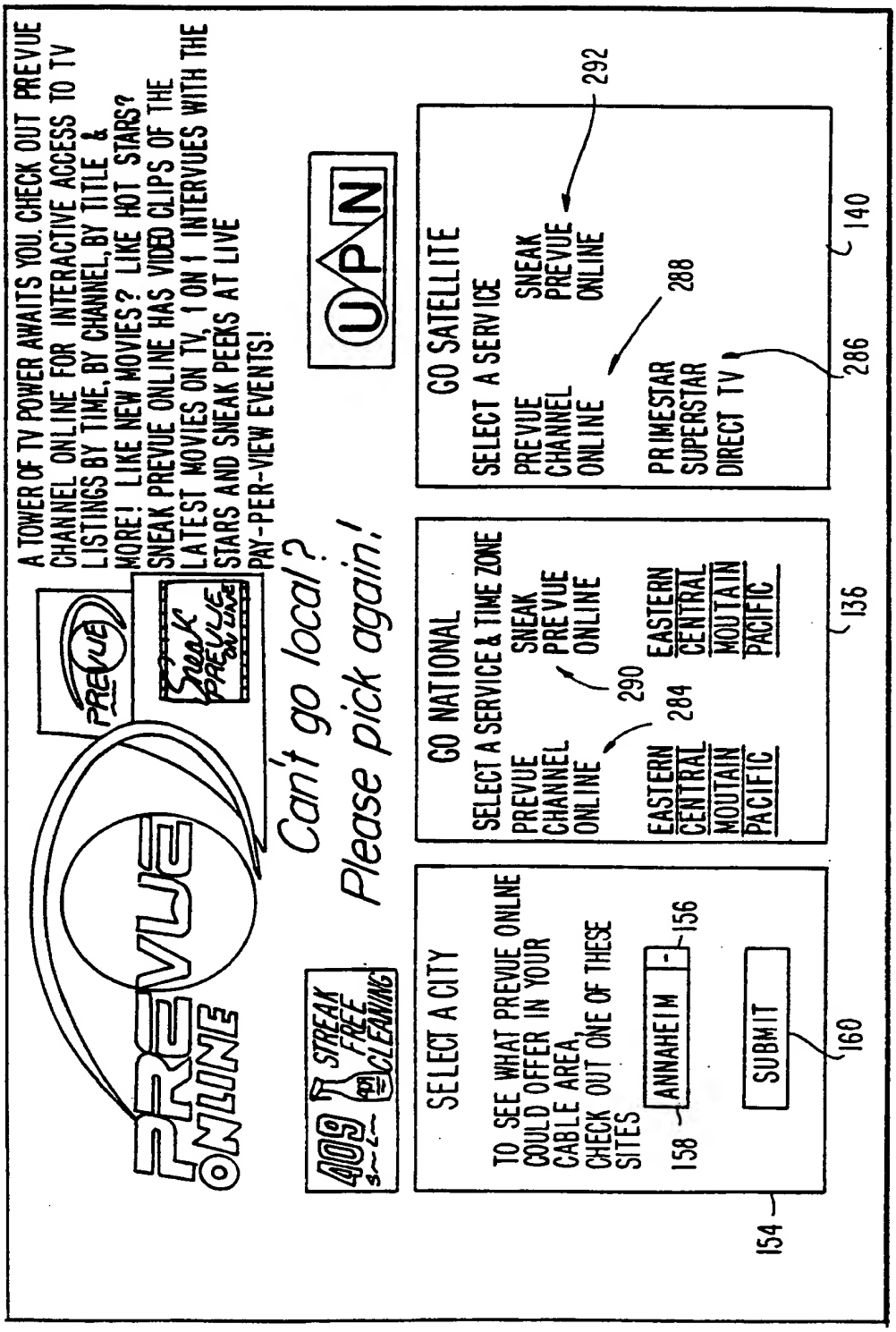

152
A TOWER OF TV POWER AWAITS YOU. CHECK OUT PREVUE CHANNEL ONLINE FOR INTERACTIVE ACCESS TO TV LISTINGS BY TIME, BY CHANNEL, BY TITLE & MORE! LIKE NEW MOVIES? LIKE HOT STARS? SNEAK PREVUE ONLINE HAS VIDEO CLIPS OF THE LATEST MOVIES ON TV, 1 ON 1 INTERVUES WITH THE STARS AND SNEAK PEEKS AT LIVE PAY-PER-VIEW EVENTS!
PREVUE ONLINE
Sneak Preview Online
Can't go local?
Please pick again!
UPN
409 STREAK FREE CLEANING
SELECT A CITY
TO SEE WHAT PREVUE ONLINE COULD OFFER IN YOUR CABLE AREA, CHECK OUT ONE OF THESE SITES
ANNAHEIM
158
156
SUBMIT
160
154
GO NATIONAL
SELECT A SERVICE & TIME ZONE
PREVUE CHANNEL ONLINE
SNEAK PREVUE ONLINE
290
EASTERN
CENTRAL
MOUTAIN
PACIFIC
284
EASTERN
CENTRAL
MOUTAIN
PACIFIC
136
GO SATELLITE
SELECT A SERVICE
PREVUE CHANNEL ONLINE
SNEAK PREVUE ONLINE
292
PRIMESTAR
SUPERSTAR
DIRECT TV
288
286
140

FIG. 9

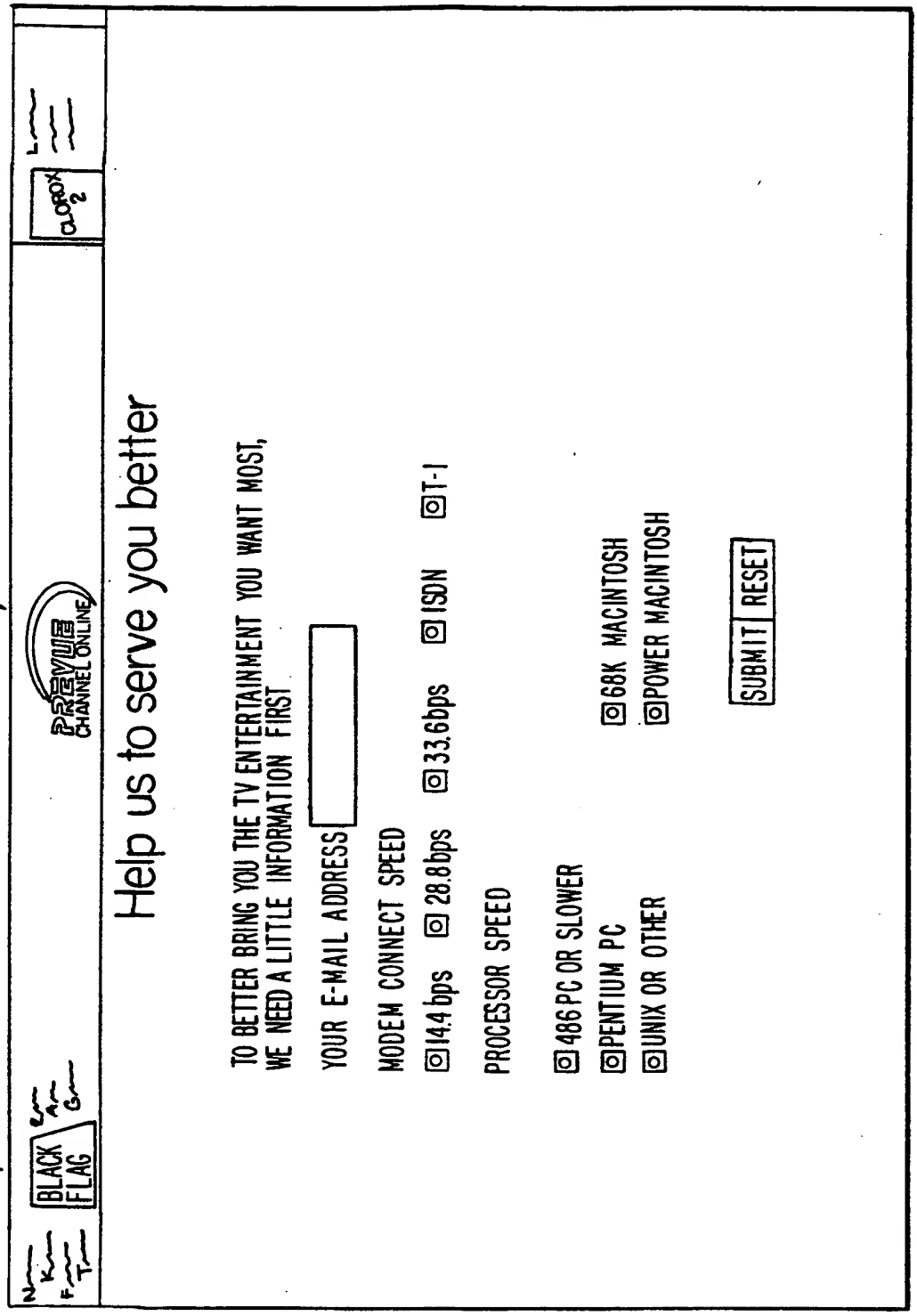

162
164
166
168
BLACK FLAG
PREVUE CHANNEL ONLINE
CLOROX 2
Help us to serve you better
TO BETTER BRING YOU THE TV ENTERTAINMENT YOU WANT MOST,
WE NEED A LITTLE INFORMATION FIRST
YOUR E-MAIL ADDRESS
MODEM CONNECT SPEED
14.4 bps
28.8bps
33.6bps
ISDN
T-1
PROCESSOR SPEED
486 PC OR SLOWER
PENTIUM PC
UNIX OR OTHER
68K MACINTOSH
POWER MACINTOSH
SUBMIT
RESET

FIG. 10

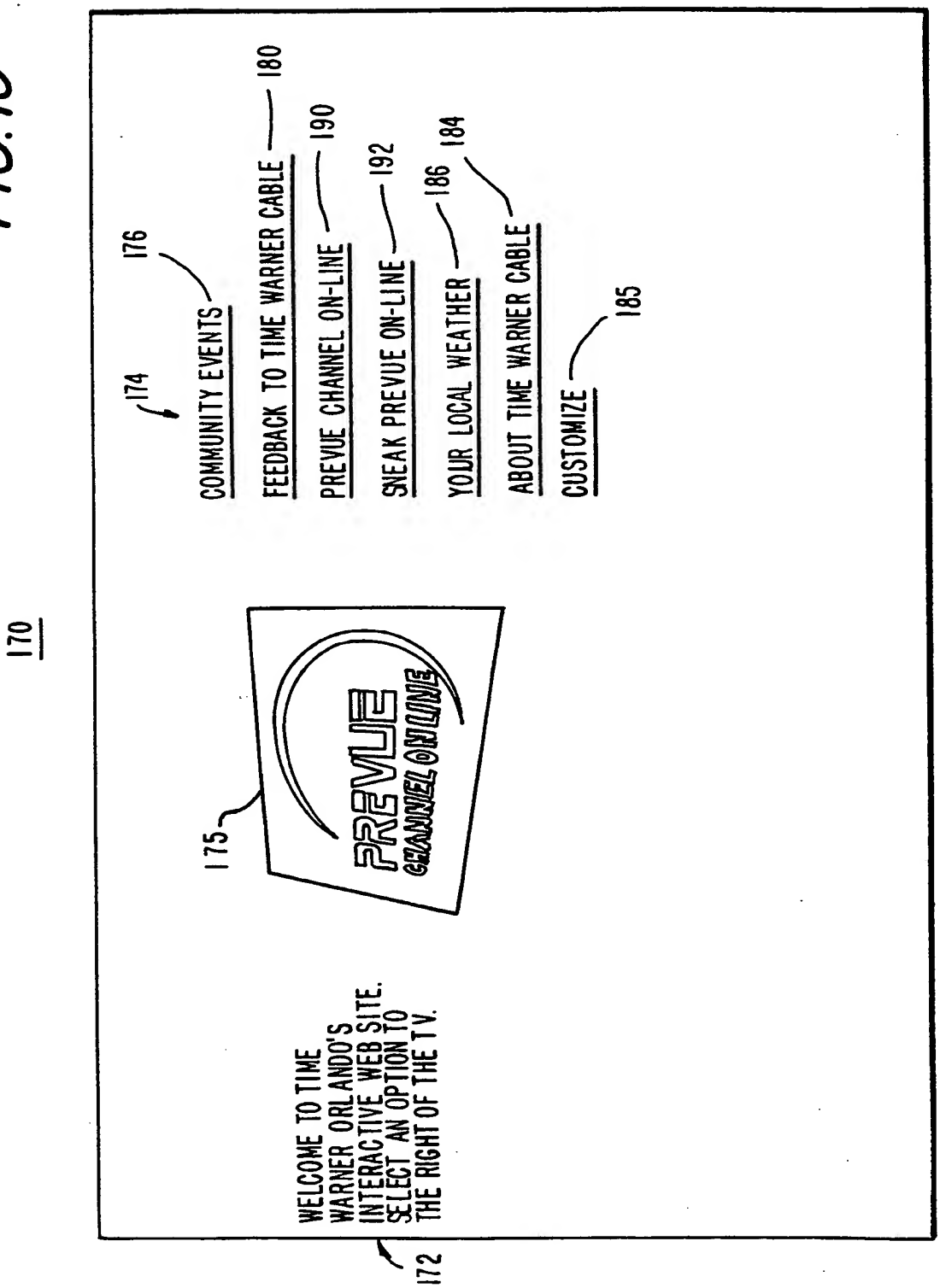

170
172
WELCOME TO TIME WARNER ORLANDO'S INTERACTIVE WEB SITE. SELECT AN OPTION TO THE RIGHT OF THE T.V.
175
PREVUE CHANNEL ON-LINE
174
176
COMMUNITY EVENTS
FEEDBACK TO TIME WARNER CABLE
180
PREVUE CHANNEL ON-LINE
190
SNEAK PREVUE ON-LINE
192
YOUR LOCAL WEATHER
186
ABOUT TIME WARNER CABLE
184
CUSTOMIZE
185

FIG. 11

178

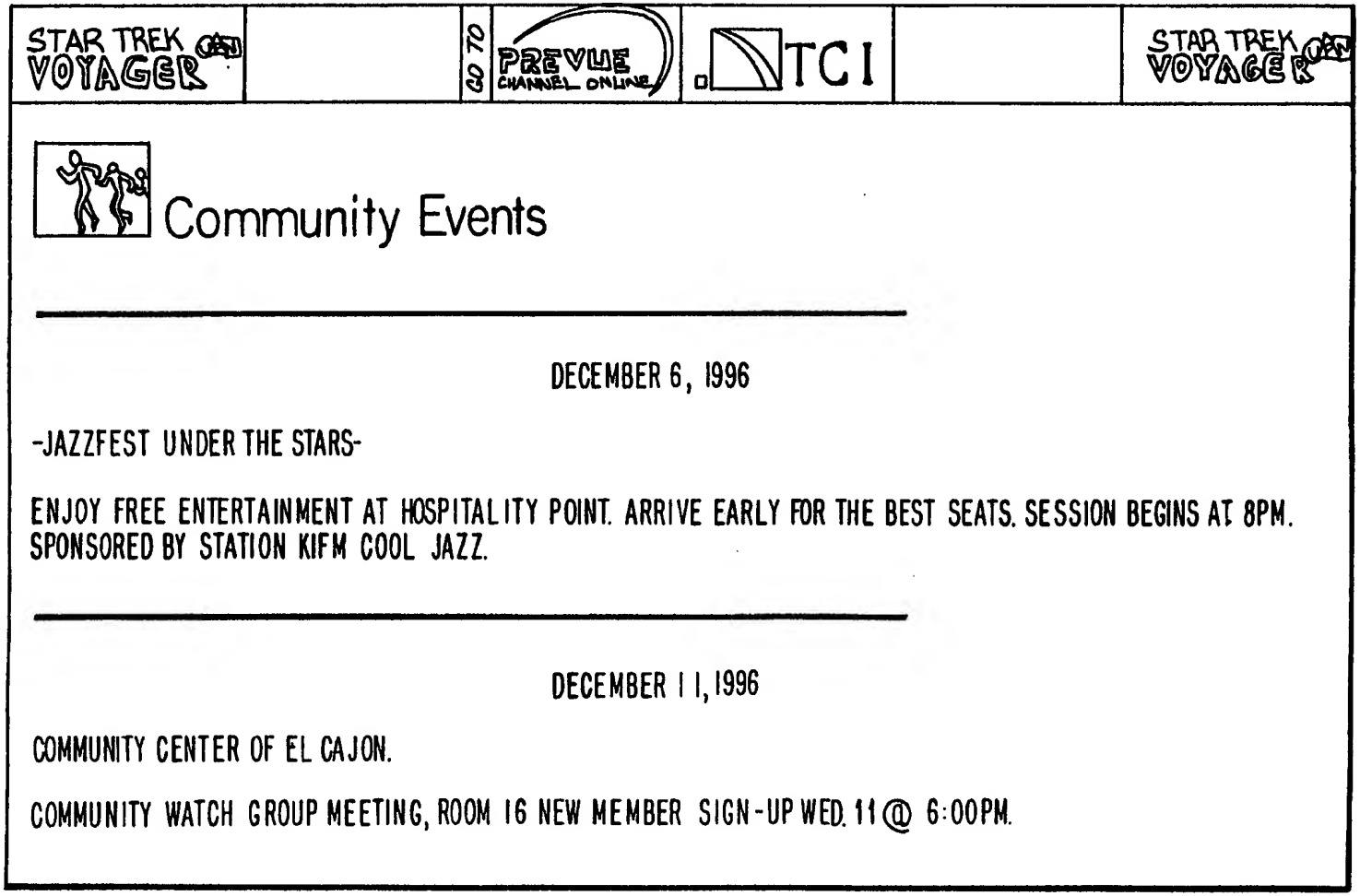

STAR TREK VOYAGER
GO TO
PREVUE CHANNEL ONLINE
TCI
STAR TREK VOYAGER
Community Events
DECEMBER 6, 1996
-JAZZFEST UNDER THE STARS-
ENJOY FREE ENTERTAINMENT AT HOSPITALITY POINT. ARRIVE EARLY FOR THE BEST SEATS. SESSION BEGINS AT 8PM. SPONSORED BY STATION KIFM COOL JAZZ.
DECEMBER 11, 1996
COMMUNITY CENTER OF EL CAJON.
COMMUNITY WATCH GROUP MEETING, ROOM 16 NEW MEMBER SIGN-UP WED. 11 @ 6:00PM.

FIG. 12

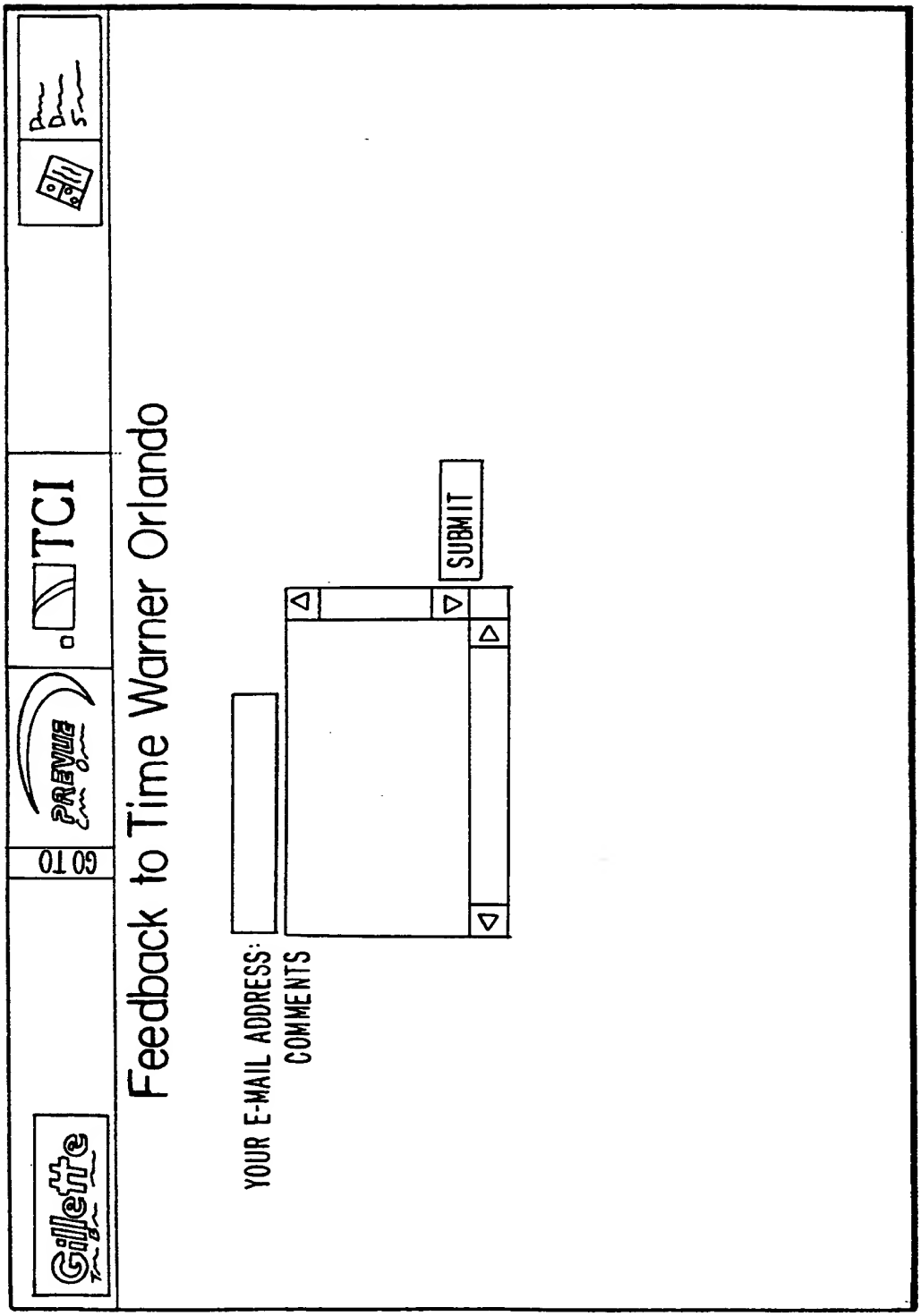

182
Gillette
GO TO
PREVUE
TCI
Feedback to Time Warner Orlando
YOUR E-MAIL ADDRESS:
COMMENTS
SUBMIT

FIG. 13

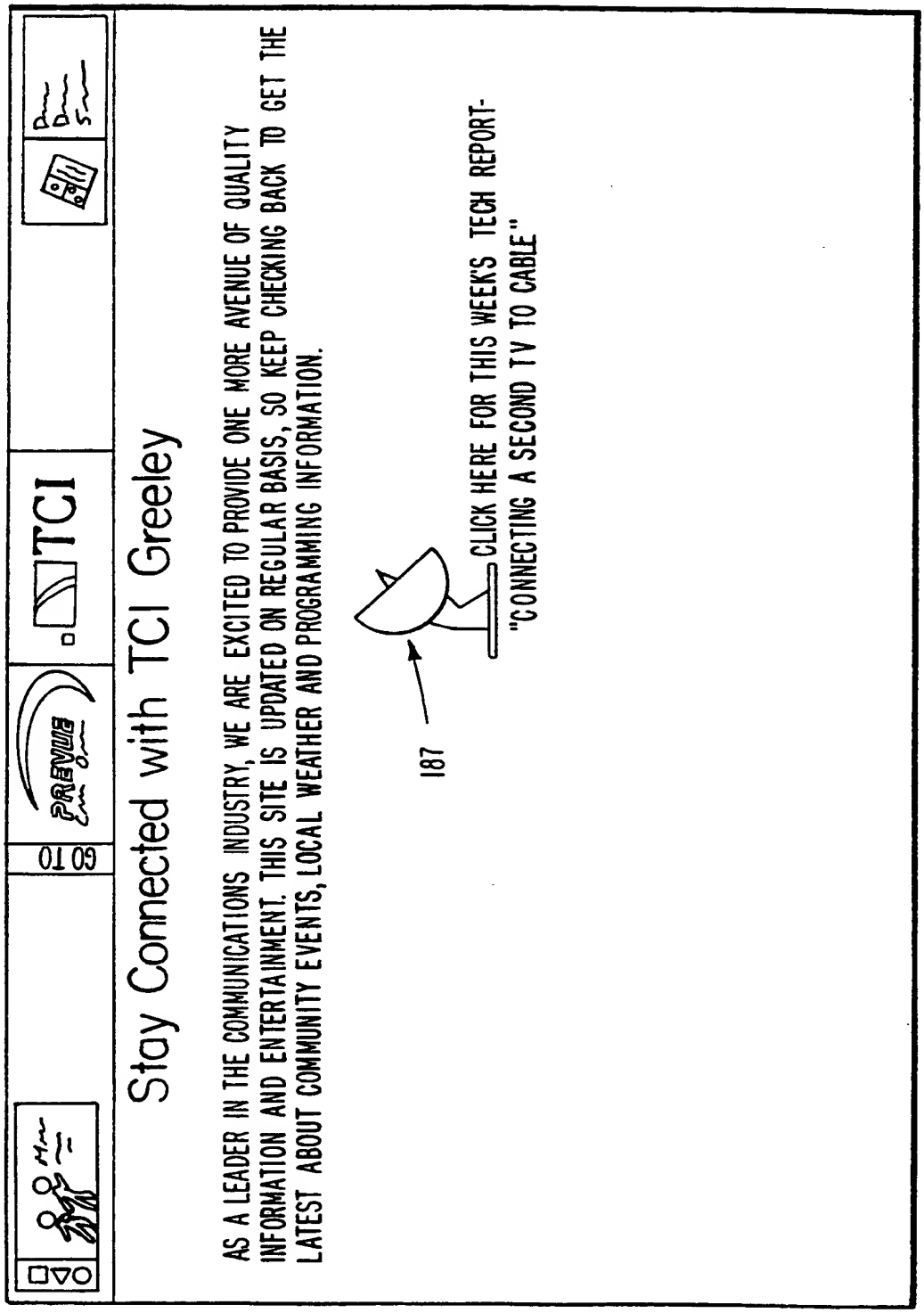
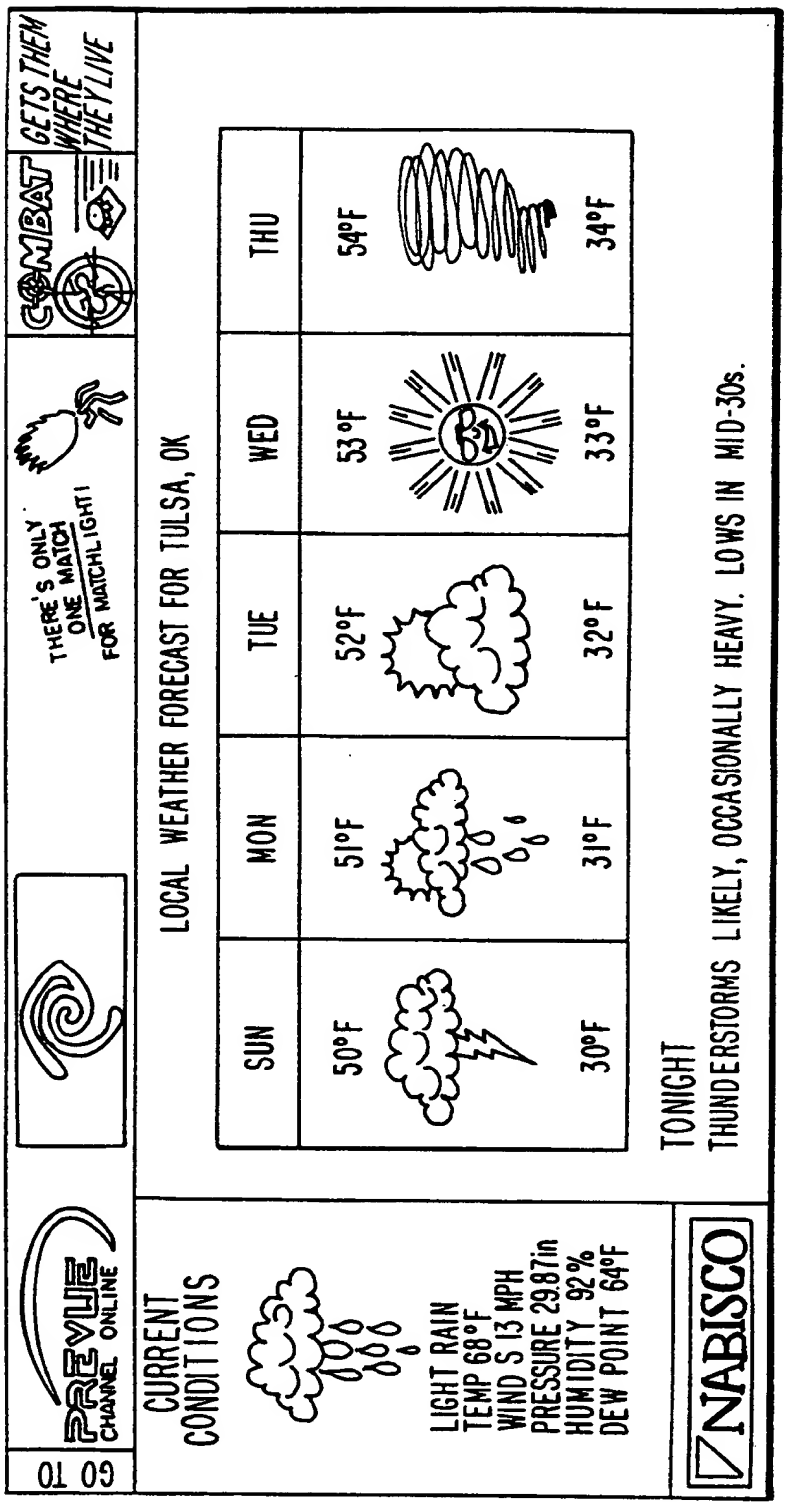

186
GO TO
PREVUE
TCI
Stay Connected with TCI Greeley
AS A LEADER IN THE COMMUNICATIONS INDUSTRY, WE ARE EXCITED TO PROVIDE ONE MORE AVENUE OF QUALITY INFORMATION AND ENTERTAINMENT. THIS SITE IS UPDATED ON REGULAR BASIS, SO KEEP CHECKING BACK TO GET THE LATEST ABOUT COMMUNITY EVENTS, LOCAL WEATHER AND PROGRAMMING INFORMATION.
187
CLICK HERE FOR THIS WEEK'S TECH REPORT- "CONNECTING A SECOND TV TO CABLE"

FIG. 14


188
GO TO
PREVUE CHANNEL ONLINE
THERE'S ONLY ONE MATCH FOR MATCHLIGHT!
COMBAT GETS THEM WHERE THEY LIVE
CURRENT CONDITIONS
LIGHT RAIN
TEMP 68°F
WIND S 13 MPH
PRESSURE 29.87in
HUMIDITY 92%
DEW POINT 64°F
LOCAL WEATHER FORECAST FOR TULSA, OK
SUN
MON
TUE
WED
THU
50°F
30°F
51°F
31°F
52°F
32°F
53°F
33°F
54°F
34°F
TONIGHT
THUNDERSTORMS LIKELY, OCCASIONALLY HEAVY. LOWS IN MID-30s.
NABISCO

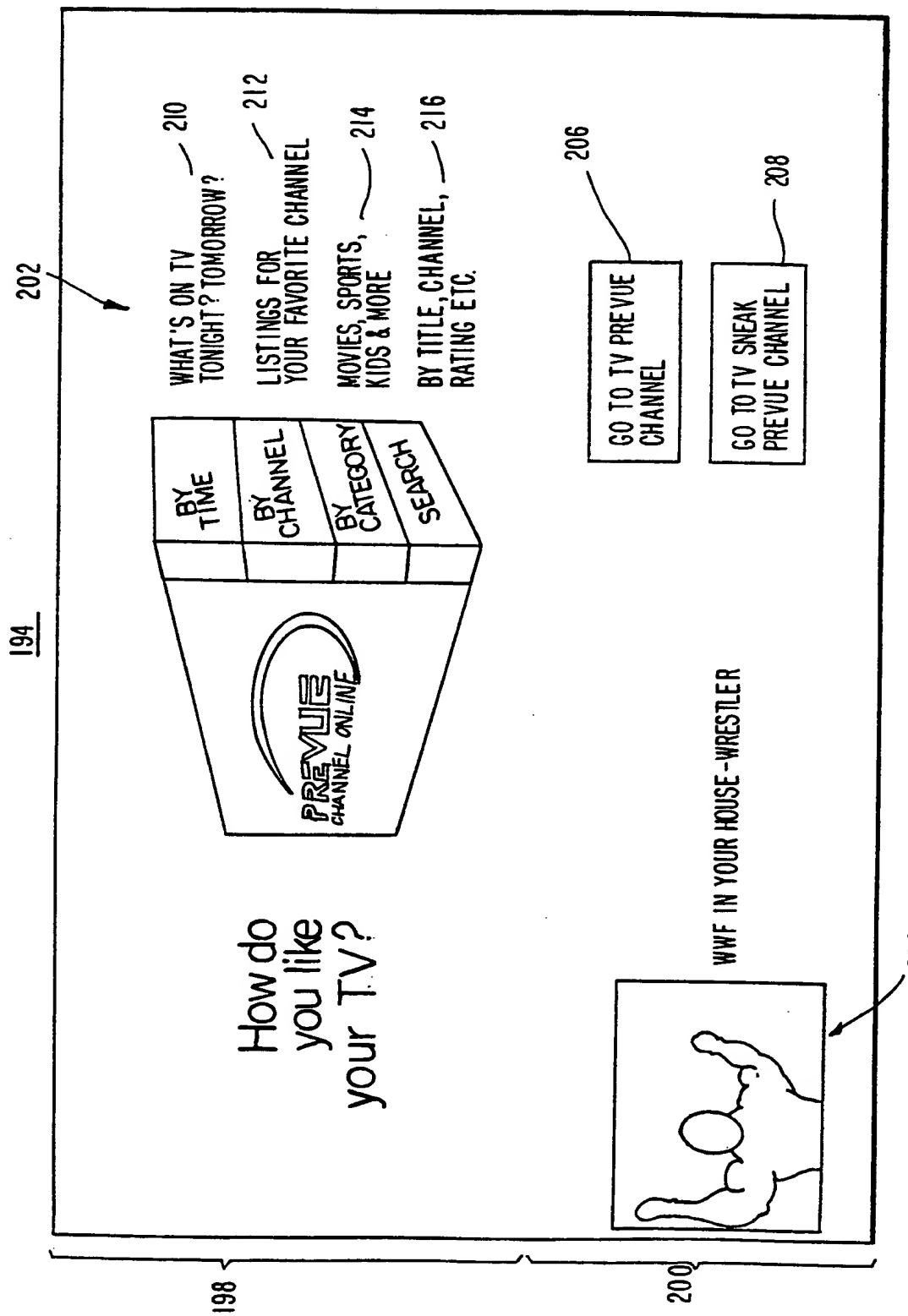

202
194
198
200
How do you like your TV?
BY TIME
BY CHANNEL
BY CATEGORY
SEARCH
PREVUE CHANNEL ONLINE
WHAT'S ON TV TONIGHT? TOMORROW?
LISTINGS FOR YOUR FAVORITE CHANNEL
MOVIES, SPORTS, KIDS & MORE
BY TITLE, CHANNEL, RATING ETC.
210
212
214
216
GO TO TV PREVUE CHANNEL
GO TO TV SNEAK PREVUE CHANNEL
206
208
WWF IN YOUR HOUSE-WRESTLER
204

FIG. 15

FIG. 16

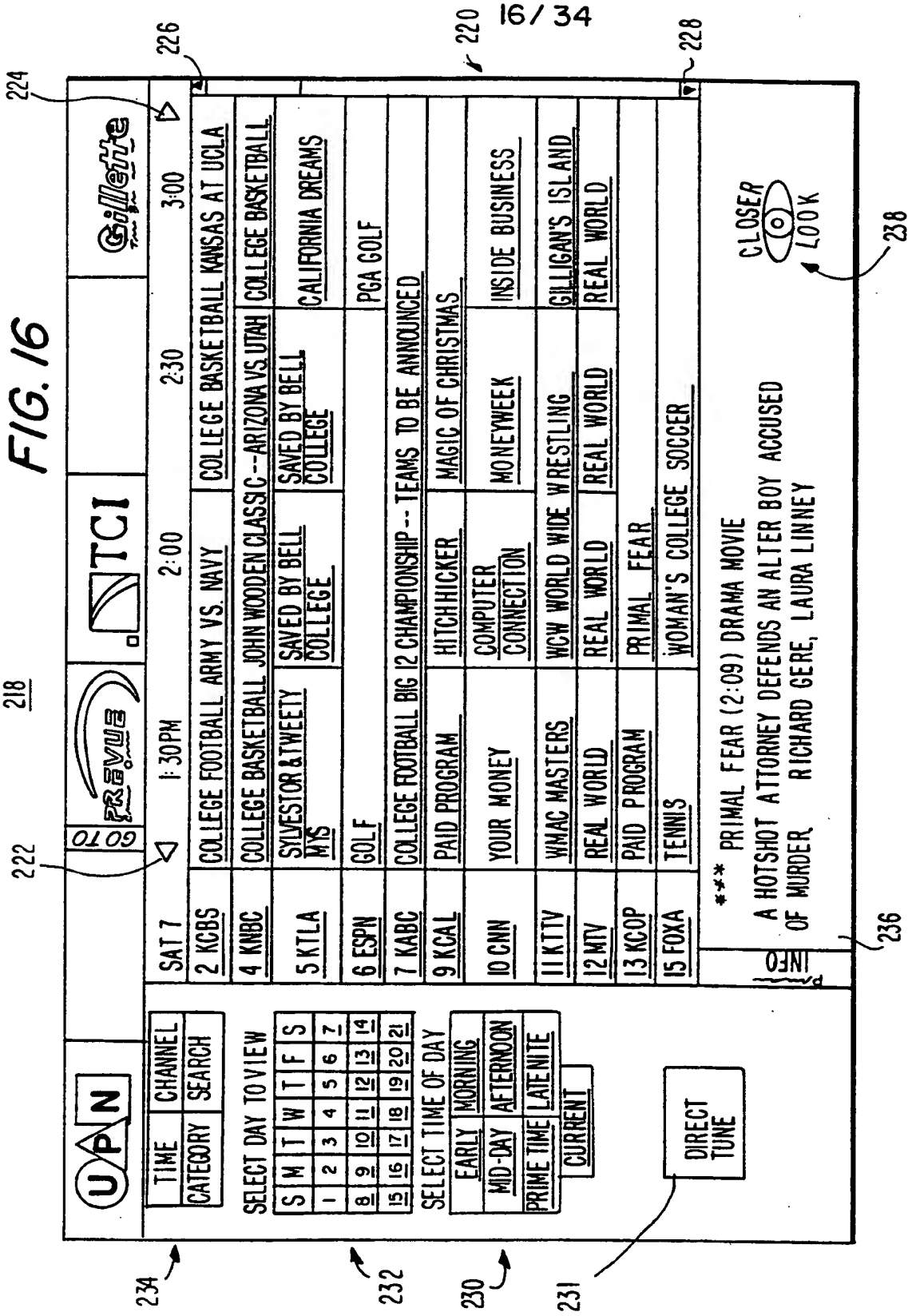

218
220
222
224
226
228
230
231
232
234
236
238
UPN
6010
PRIMA
TCI
Gillette
SAT 7
1:30PM
2:00
2:30
3:00
2 KCBS
4 KNBC
5 KTLA
6 ESPN
7 KABC
9 KCAL
10 CNN
11 KTTV
12 MTV
13 KCOP
15 FOXA
COLLEGE FOOTBALL ARMY VS. NAVY
COLLEGE BASKETBALL JOHN WOODEN CLASSIC--ARIZONA VS. UTAH
SYLVESTOR & TWEETY MYS
SAVED BY BELL COLLEGE
GOLF
COLLEGE FOOTBALL BIG 12 CHAMPIONSHIP -- TEAMS TO BE ANNOUNCED
PAID PROGRAM
HITCHHICKER
COMPUTER CONNECTION
YOUR MONEY
MONEYWEEK
WMAC MASTERS
WCW WORLD WIDE WRESTLING
REAL WORLD
REAL WORLD
PAID PROGRAM
PRIMAL FEAR
TENNIS
WOMAN'S COLLEGE SOCCER
COLLEGE BASKETBALL KANSAS AT UCLA
SAVED BY BELL COLLEGE
CALIFORNIA DREAMS
PGA GOLF
MAGIC OF CHRISTMAS
INSIDE BUSINESS
GILLIGAN'S ISLAND
REAL WORLD
*** PRIMAL FEAR (2:09) DRAMA MOVIE
A HOTSHOT ATTORNEY DEFENDS AN ALTER BOY ACCUSED OF MURDER RICHARD GERE, LAURA LINNEY
CLOSER LOOK
INFO
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY MORNING
MID-DAY AFTERNOON
PRIME TIME LATENITE
CURRENT
DIRECT TUNE

FIG. 17

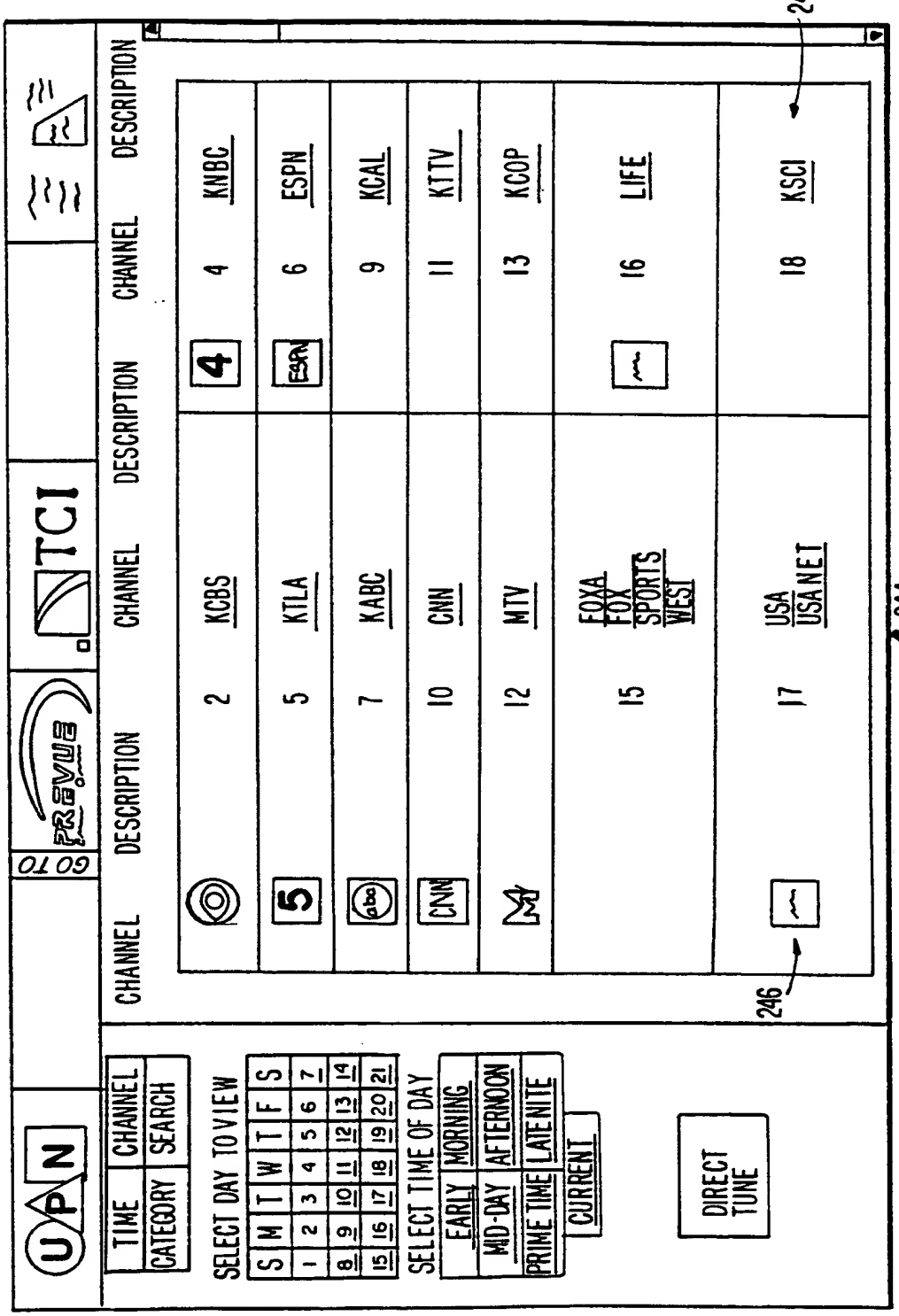

242
UPN
GO TO
PREVUE
TCI
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY MORNING
MID-DAY AFTERNOON
PRIME TIME LATE NITE
CURRENT
DIRECT TUNE
CHANNEL DESCRIPTION CHANNEL DESCRIPTION CHANNEL DESCRIPTION
2 KCBS
4 KNBC
5 KTLA
6 ESPN
7 KABC
9 KCAL
10 CNN
11 KTTV
12 MTV
13 KCOP
15 FOXA FOX SPORTS WEST
16 LIFE
17 USA USA NET
18 KSCI
246
248
244

FIG. 18

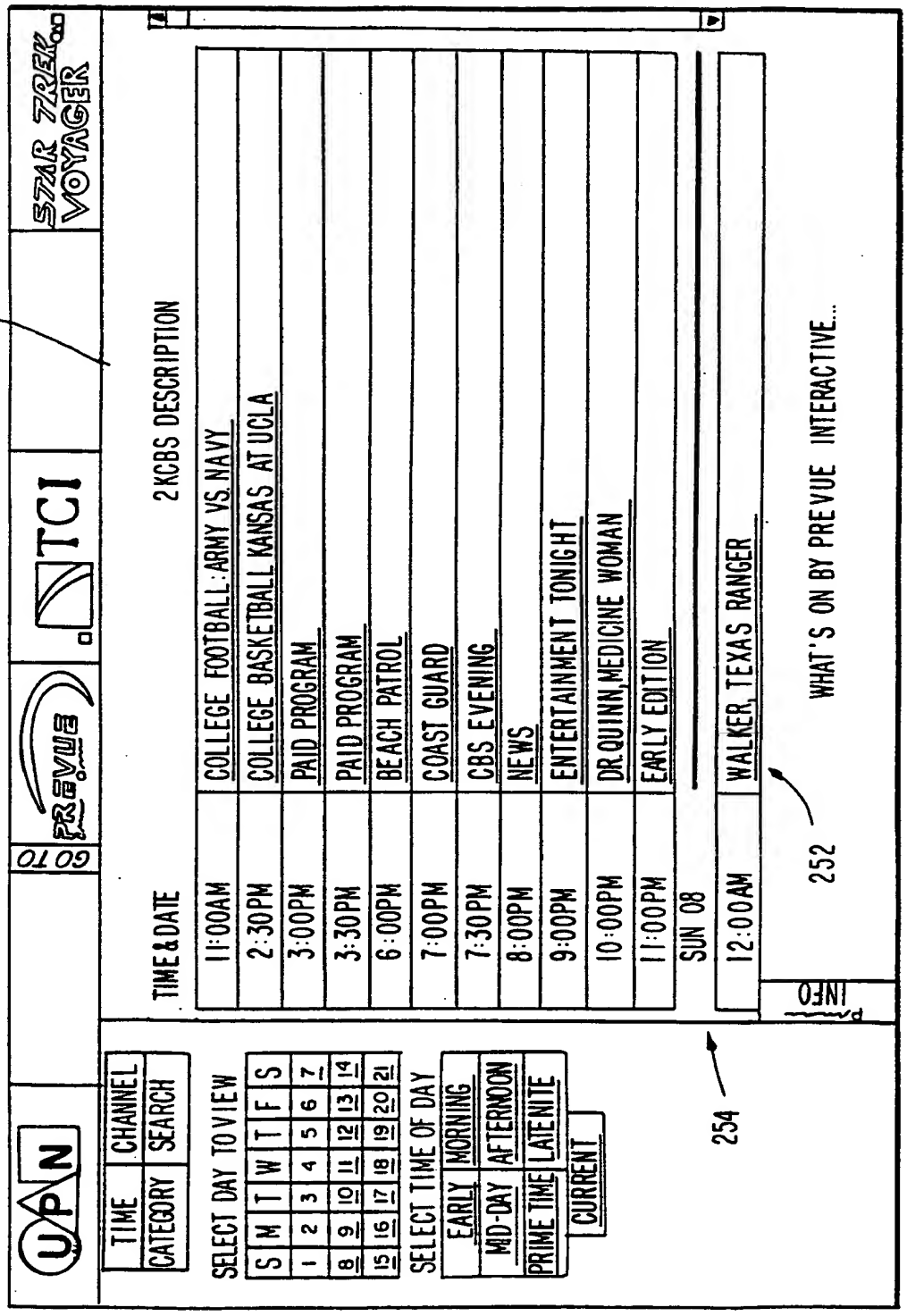

250
256
UPN
GOTO
PREVUE
TCI
STAR TREK VOYAGER
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY
MORNING
MID-DAY
AFTERNOON
PRIME TIME
LATE NITE
CURRENT
TIME & DATE
2 KCBS DESCRIPTION
11:00AM COLLEGE FOOTBALL: ARMY VS. NAVY
2:30PM COLLEGE BASKETBALL KANSAS AT UCLA
3:00PM PAID PROGRAM
3:30PM PAID PROGRAM
6:00PM BEACH PATROL
7:00PM COAST GUARD
7:30PM CBS EVENING
8:00PM NEWS
9:00PM ENTERTAINMENT TONIGHT
10:00PM DR. QUINN, MEDICINE WOMAN
11:00PM EARLY EDITION
SUN 08
12:00AM WALKER, TEXAS RANGER
252
254
INFO
WHAT'S ON BY PREVUE INTERACTIVE...

FIG. 19

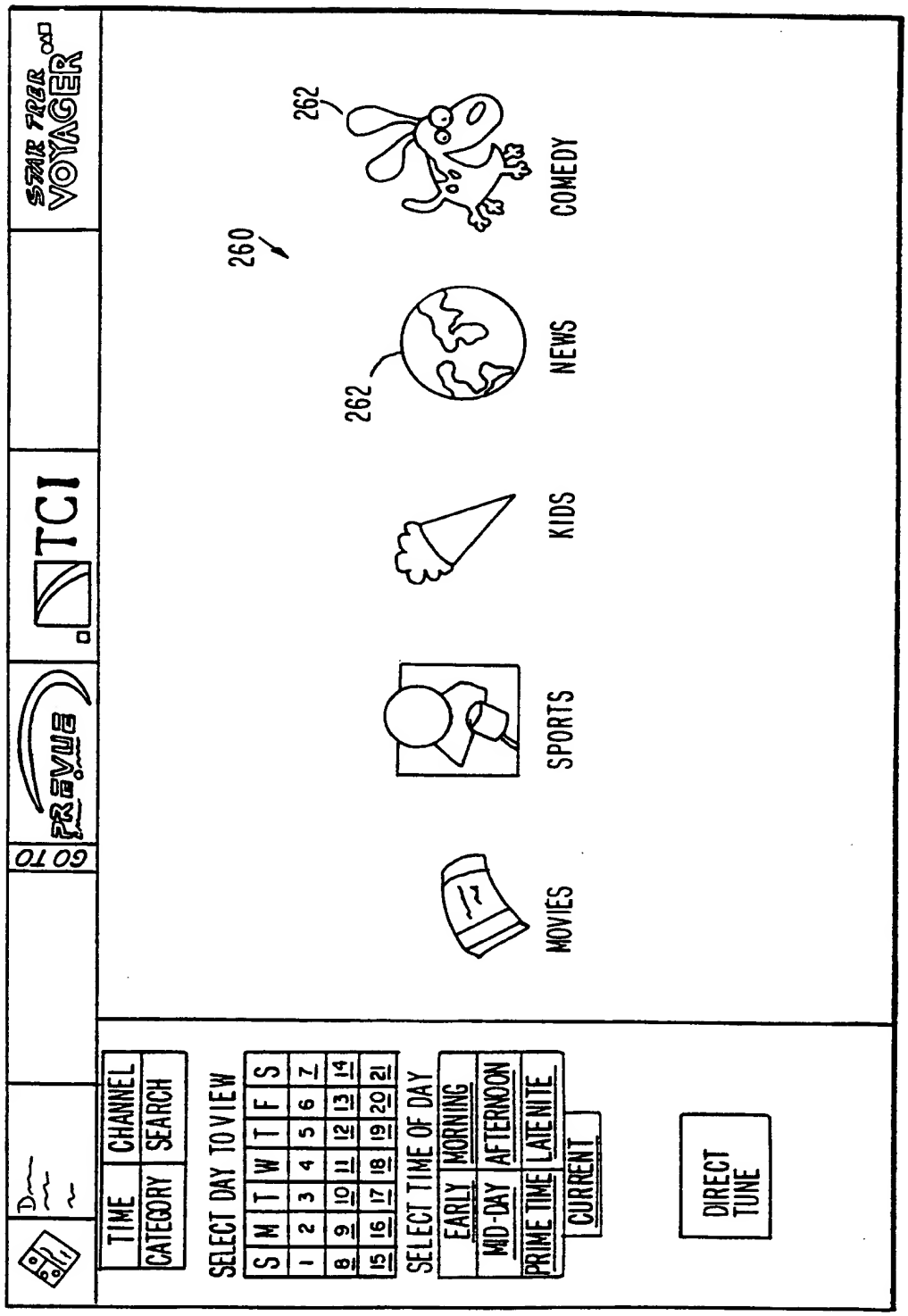

258
GO TO
PREVUE
TCI
STAR TREK VOYAGER
260
262
262
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY MORNING
MID-DAY AFTERNOON
PRIME TIME LATE NITE
CURRENT
DIRECT TUNE
MOVIES
SPORTS
KIDS
NEWS
COMEDY

FIG. 20

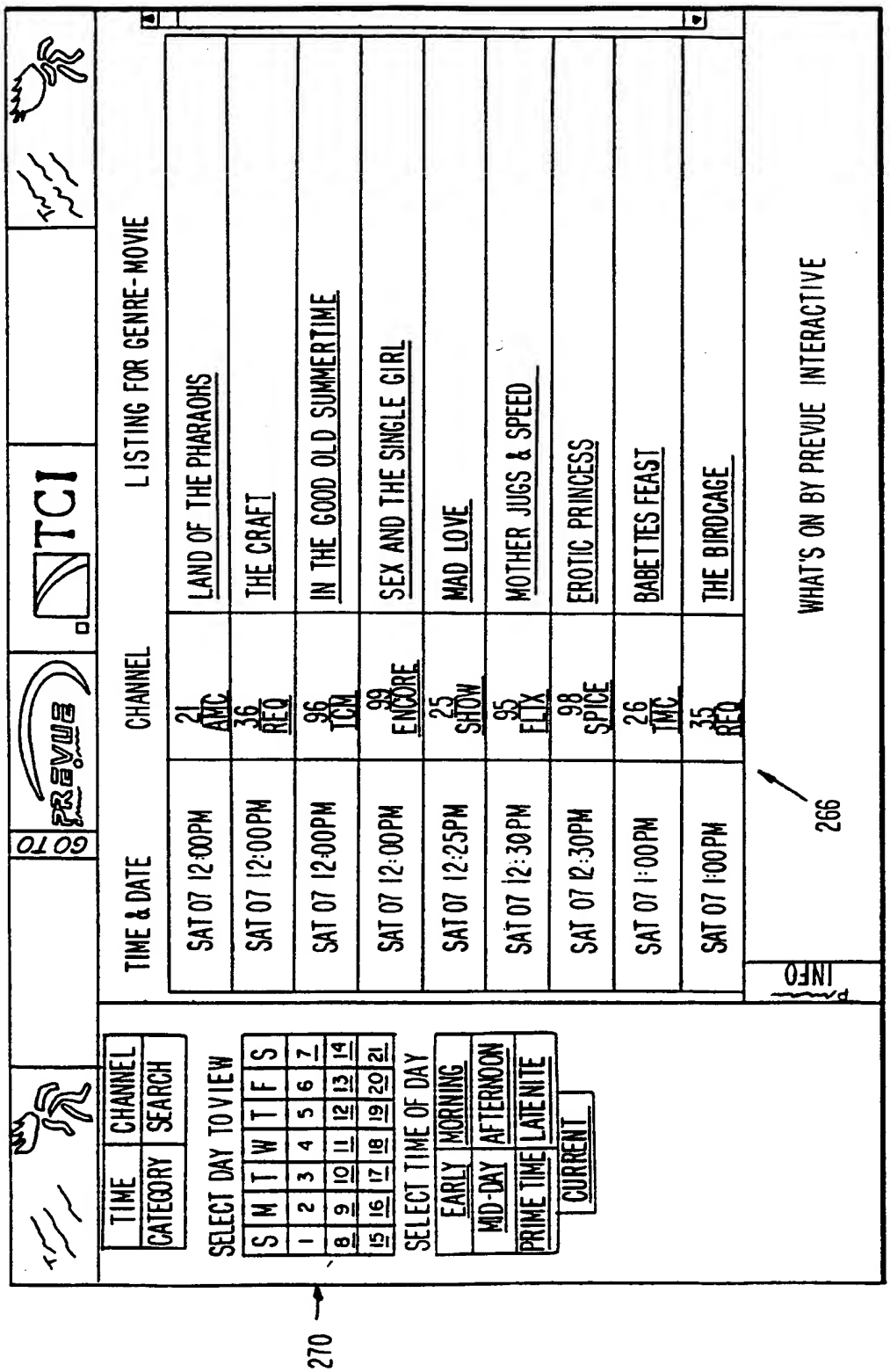

264
TCI
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY MORNING
MID-DAY AFTERNOON
PRIME TIME LATE NITE
CURRENT
270
TIME & DATE
CHANNEL
LISTING FOR GENRE-MOVIE
SAT 07 12:00PM 21 AMC LAND OF THE PHARAOHS
SAT 07 12:00PM 36 REQ THE CRAFT
SAT 07 12:00PM 96 TCM IN THE GOOD OLD SUMMERTIME
SAT 07 12:00PM 99 ENCORE SEX AND THE SINGLE GIRL
SAT 07 12:25PM 25 SHOW MAD LOVE
SAT 07 12:30PM 95 FLIX MOTHER JUGS & SPEED
SAT 07 12:30PM 98 SPICE EROTIC PRINCESS
SAT 07 1:00PM 26 TMC BABETTES FEAST
SAT 07 1:00PM 35 REQ THE BIRDCAGE
INFO
WHAT'S ON BY PREVUE INTERACTIVE
266

FIG. 21

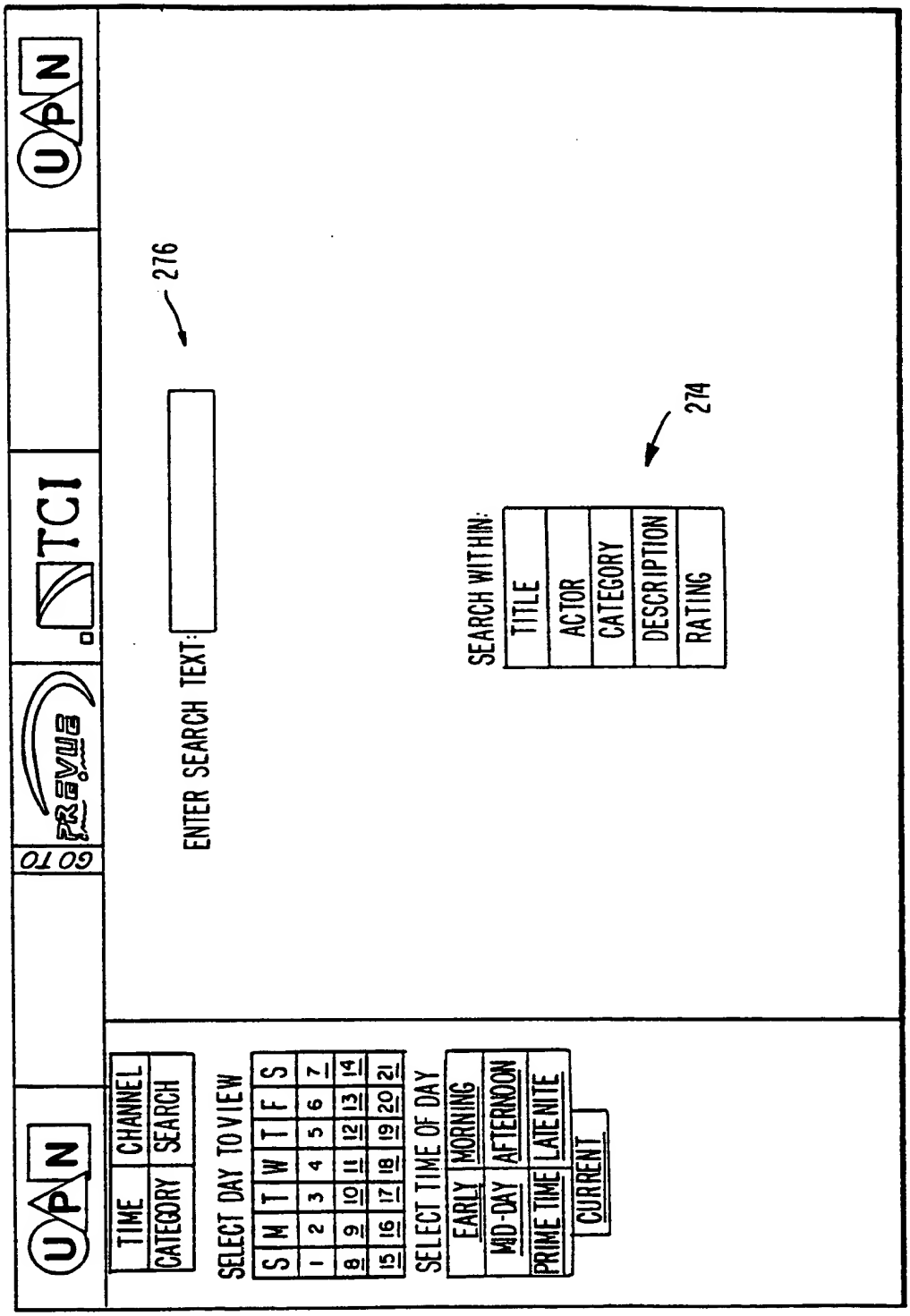

272
UPN
6010
PRIVUE
TCI
UPN
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY MORNING
MID-DAY AFTERNOON
PRIME TIME LATE NITE
CURRENT
ENTER SEARCH TEXT:
276
SEARCH WITHIN:
TITLE
ACTOR
CATEGORY
DESCRIPTION
RATING
274

FIG. 22

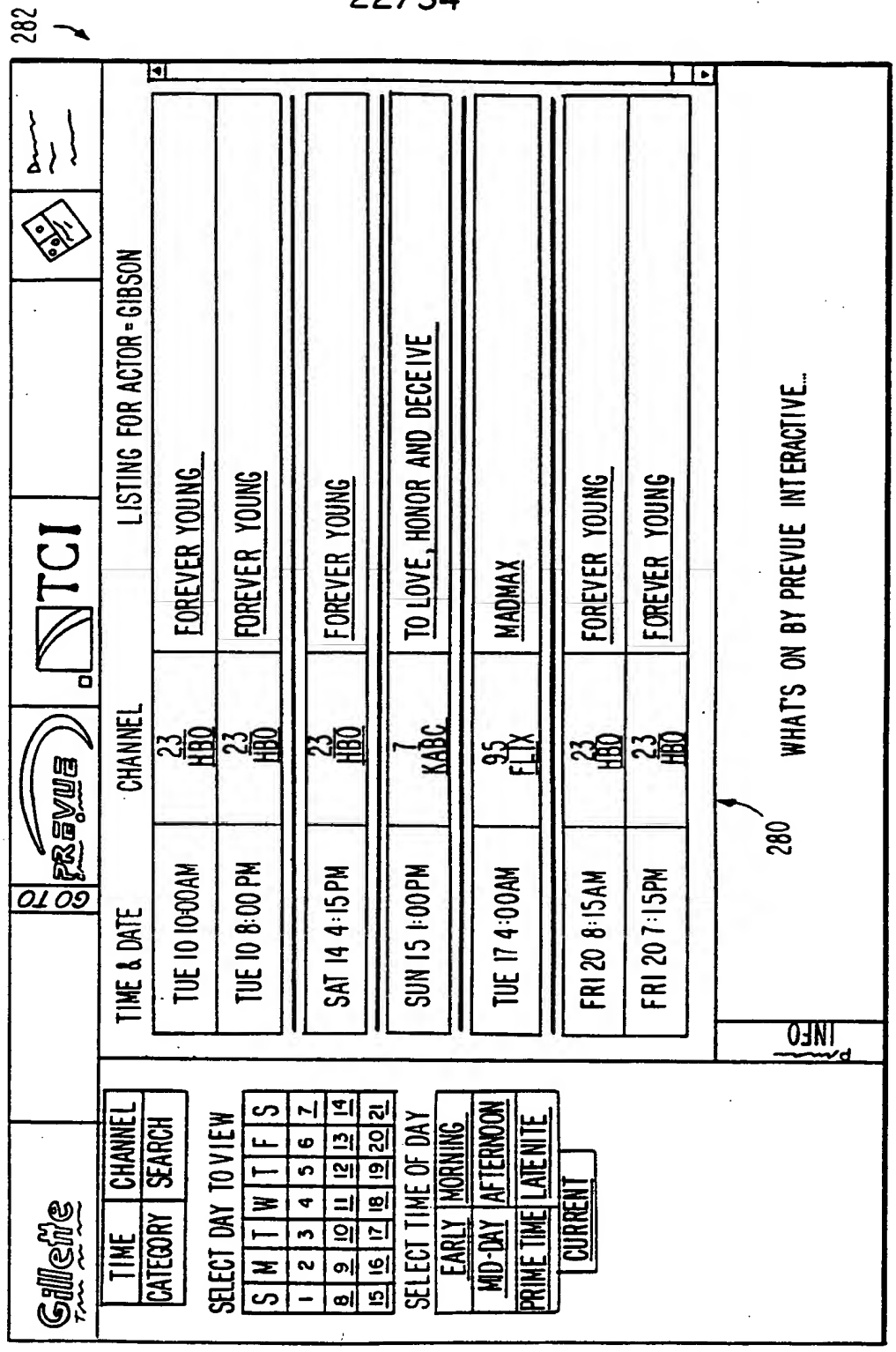

278
282
Gilette
GOTO PREVUE
TCI
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY MORNING
MID-DAY AFTERNOON
PRIME TIME LATENITE
CURRENT
TIME & DATE
CHANNEL
LISTING FOR ACTOR=GIBSON
TUE 10 10:00AM 23 HBO FOREVER YOUNG
TUE 10 8:00 PM 23 HBO FOREVER YOUNG
SAT 14 4:15PM 23 HBO FOREVER YOUNG
SUN 15 1:00PM 7 KABC TO LOVE, HONOR AND DECEIVE
TUE 17 4:00AM 95 FLIX MADMAX
FRI 20 8:15AM 23 HBO FOREVER YOUNG
FRI 20 7:15PM 23 HBO FOREVER YOUNG
280
WHAT'S ON BY PREVUE INTERACTIVE...
INFO

FIG. 23

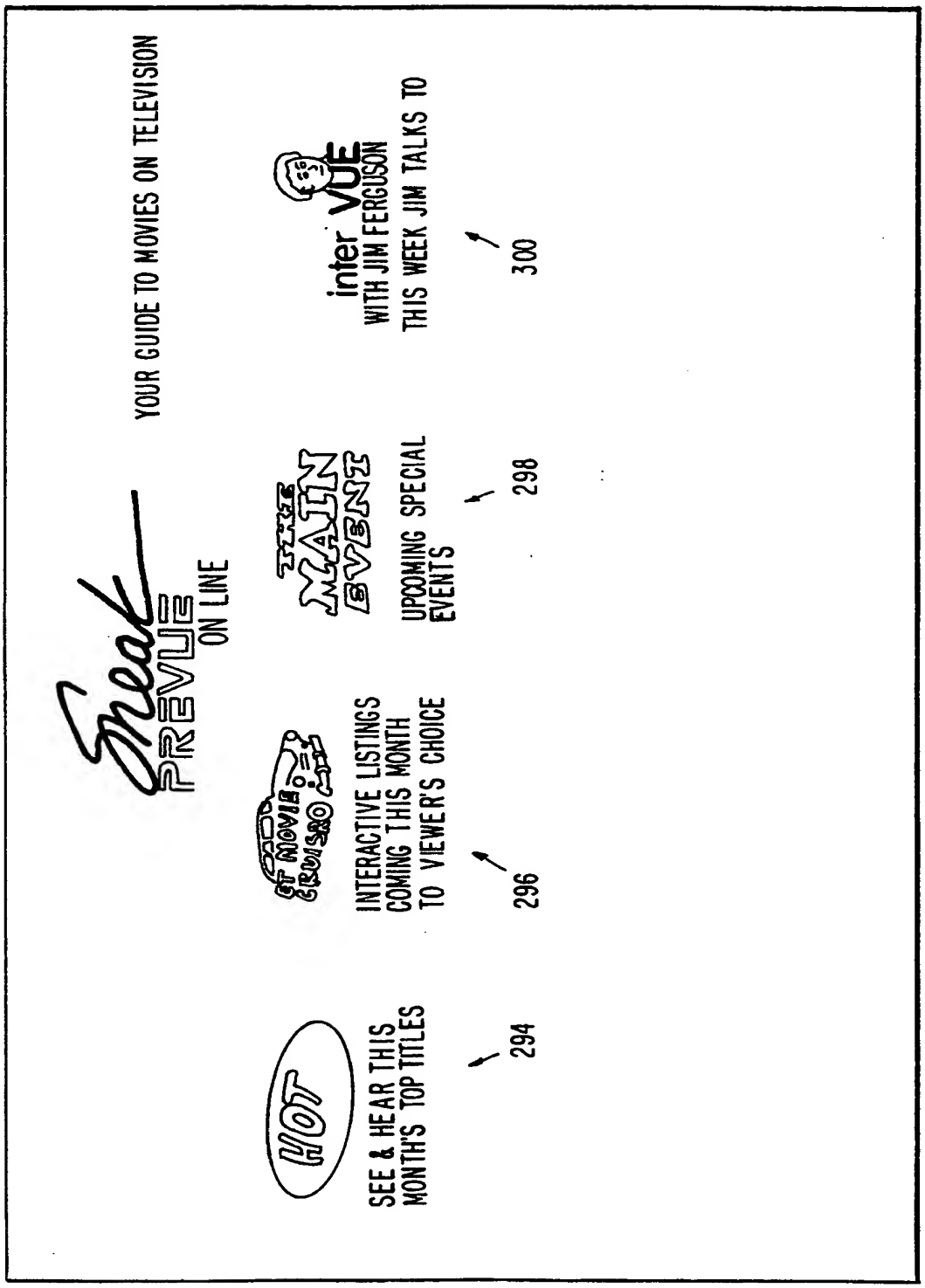

196
Sneak PREVUE ON LINE
YOUR GUIDE TO MOVIES ON TELEVISION
THE MAIN EVENT
UPCOMING SPECIAL EVENTS
298
inter VUE
WITH JIM FERGUSON
THIS WEEK JIM TALKS TO
300
HOT
SEE & HEAR THIS MONTH'S TOP TITLES
294
INTERACTIVE LISTINGS COMING THIS MONTH TO VIEWER'S CHOICE
296

FIG. 24

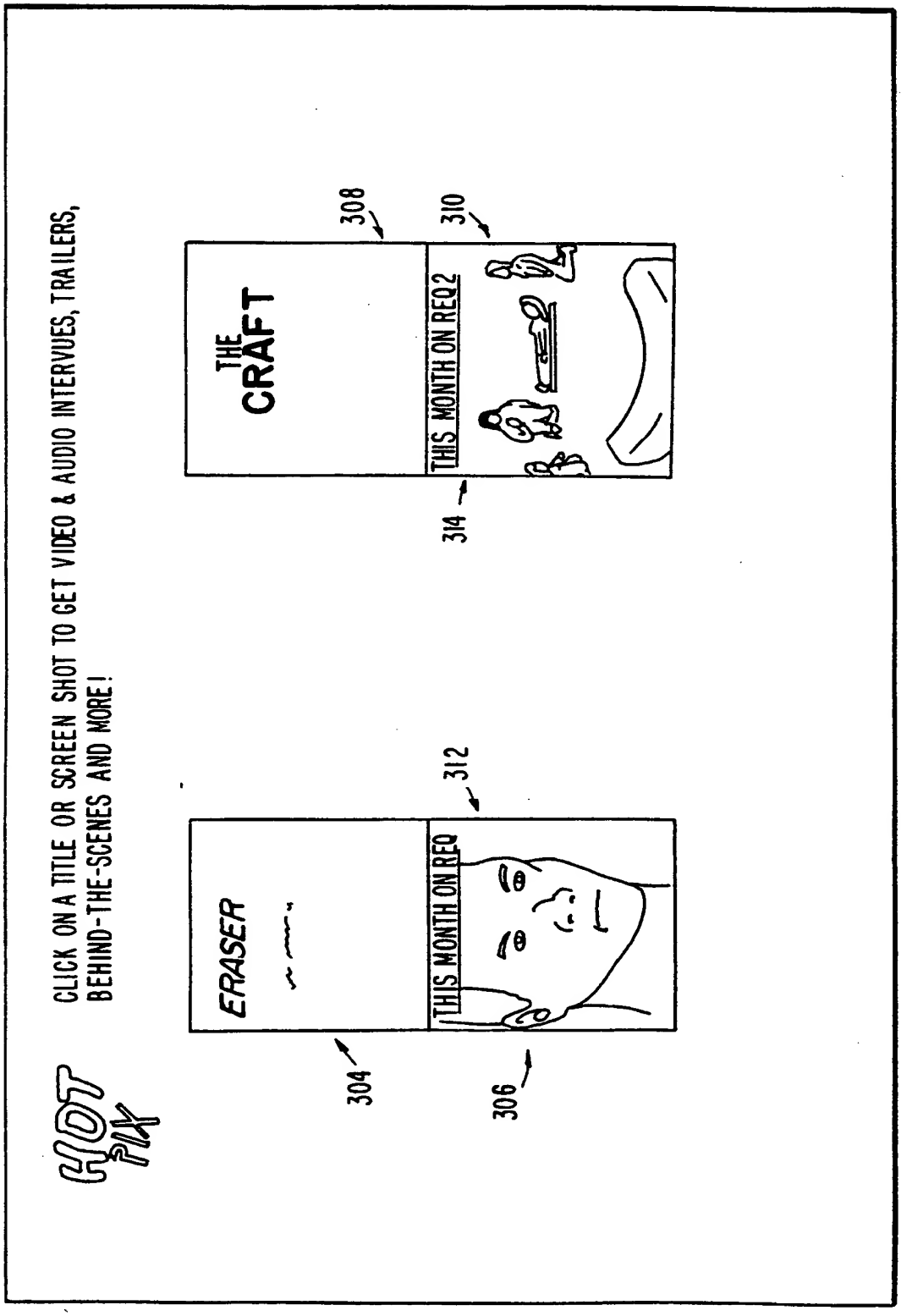

302
HOT PIX
CLICK ON A TITLE OR SCREEN SHOT TO GET VIDEO & AUDIO INTERVUES, TRAILERS, BEHIND-THE-SCENES AND MORE!
ERASER
THIS MONTH ON REQ
THE CRAFT
THIS MONTH ON REQ 2
304
306
308
310
312
314

FIG 25

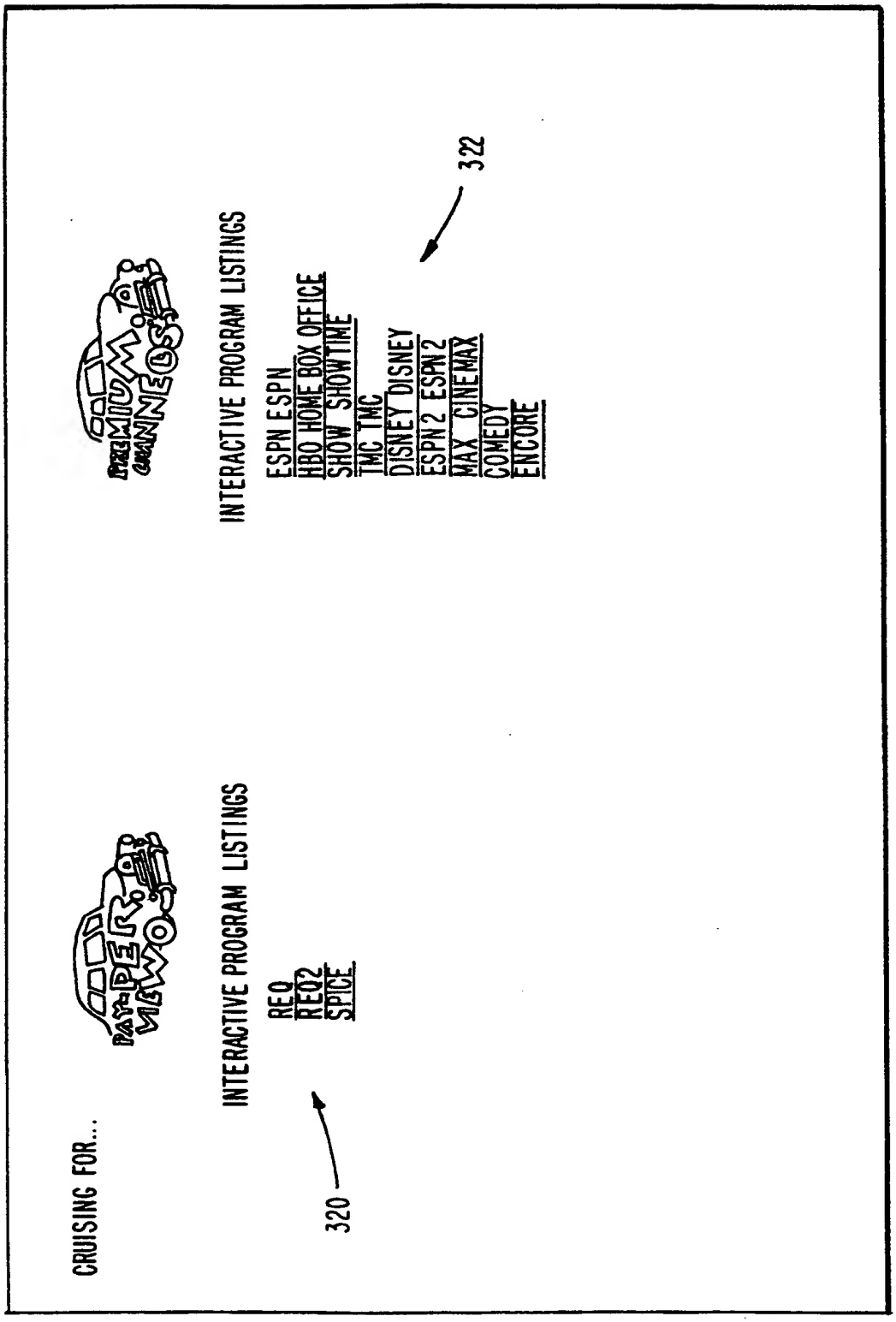

318
CRUISING FOR...
INTERACTIVE PROGRAM LISTINGS
REQ
REQ2
SPICE
320
INTERACTIVE PROGRAM LISTINGS
ESPN ESPN
HBO HOME BOX OFFICE
SHOW SHOWTIME
TMC TMC
DISNEY DISNEY
ESPN2 ESPN2
MAX CINEMAX
COMEDY
ENCORE
322

FIG.26

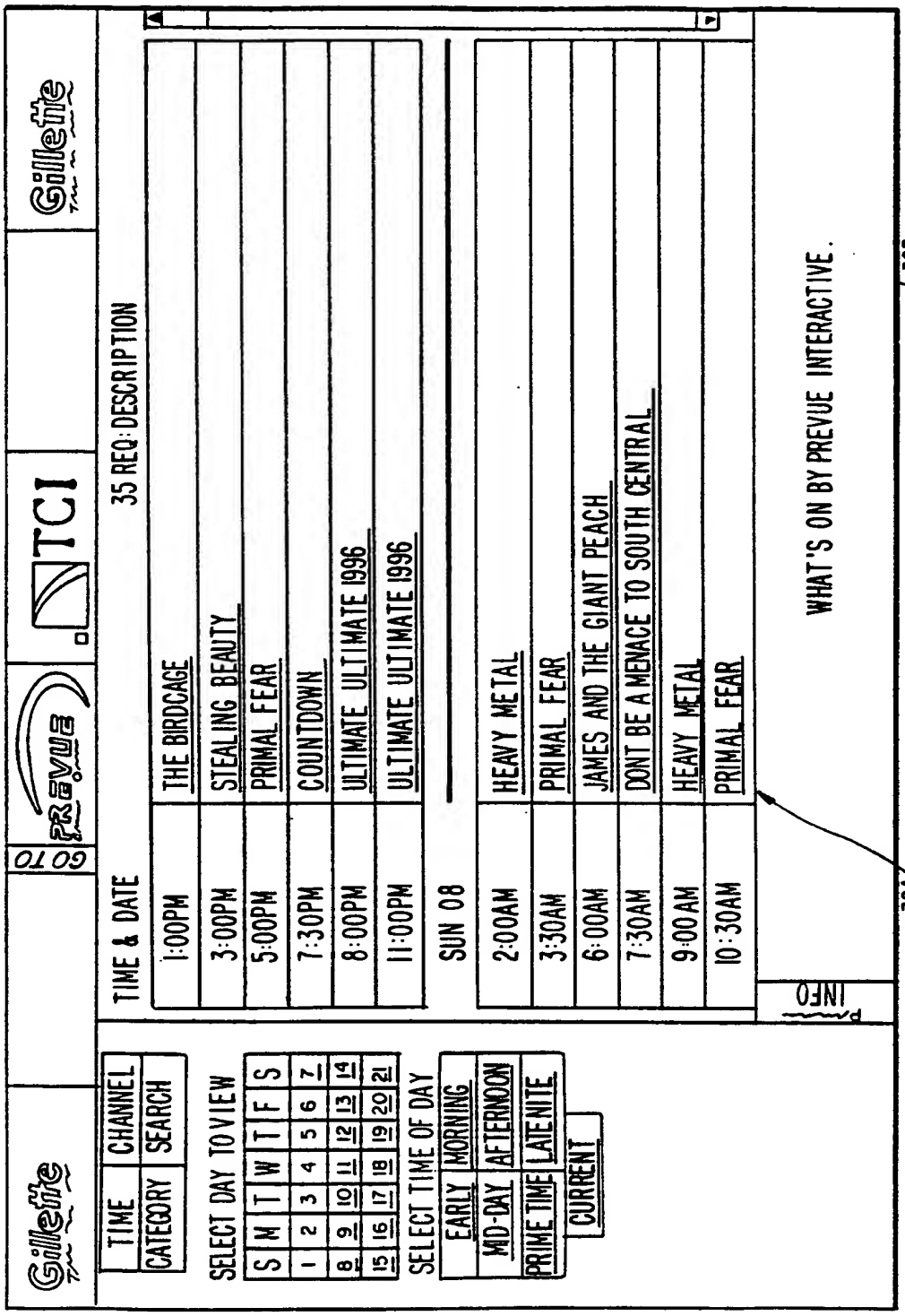

316
Gillette
GO TO
Prevue
TCI
Gillette
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY
MORNING
MID-DAY
AFTERNOON
PRIME TIME
LATE NITE
CURRENT
TIME & DATE
35 REQ: DESCRIPTION
1:00PM THE BIRDCAGE
3:00PM STEALING BEAUTY
5:00PM PRIMAL FEAR
7:30PM COUNTDOWN
8:00PM ULTIMATE ULTIMATE 1996
11:00PM ULTIMATE ULTIMATE 1996
SUN 08
2:00AM HEAVY METAL
3:30AM PRIMAL FEAR
6:00AM JAMES AND THE GIANT PEACH
7:30AM DONT BE A MENACE TO SOUTH CENTRAL
9:00AM HEAVY METAL
10:30AM PRIMAL FEAR
INFO
WHAT'S ON BY PREVUE INTERACTIVE.
324
325

FIG. 27

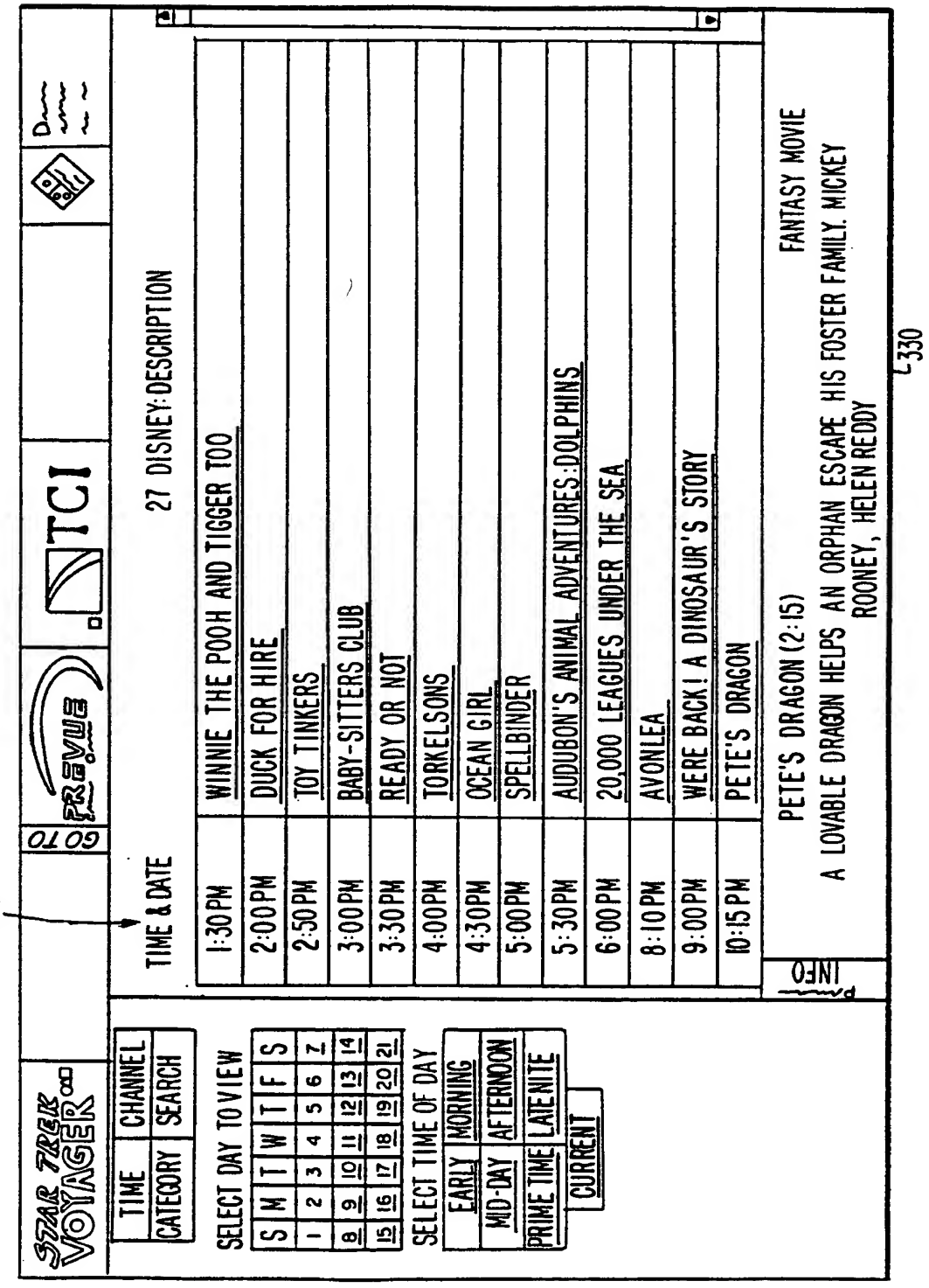

328
326
330
STAR TREK VOYAGER
GOTO
TV GUIDE
TCI
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY
MORNING
MID-DAY
AFTERNOON
PRIME TIME
LATE NITE
CURRENT
TIME & DATE
27 DISNEY: DESCRIPTION
1:30 PM WINNIE THE POOH AND TIGGER TOO
2:00 PM DUCK FOR HIRE
2:50 PM TOY TINKERS
3:00 PM BABY-SITTERS CLUB
3:30 PM READY OR NOT
4:00 PM TORKELSONS
4:30 PM OCEAN GIRL
5:00 PM SPELLBINDER
5:30 PM AUDUBON'S ANIMAL ADVENTURES: DOLPHINS
6:00 PM 20,000 LEAGUES UNDER THE SEA
8:10 PM AVONLEA
9:00 PM WERE BACK! A DINOSAUR'S STORY
10:15 PM PETE'S DRAGON
INFO
PETE'S DRAGON (2:15)
FANTASY MOVIE
A LOVABLE DRAGON HELPS AN ORPHAN ESCAPE HIS FOSTER FAMILY. MICKEY ROONEY, HELEN REDDY

FIG.28

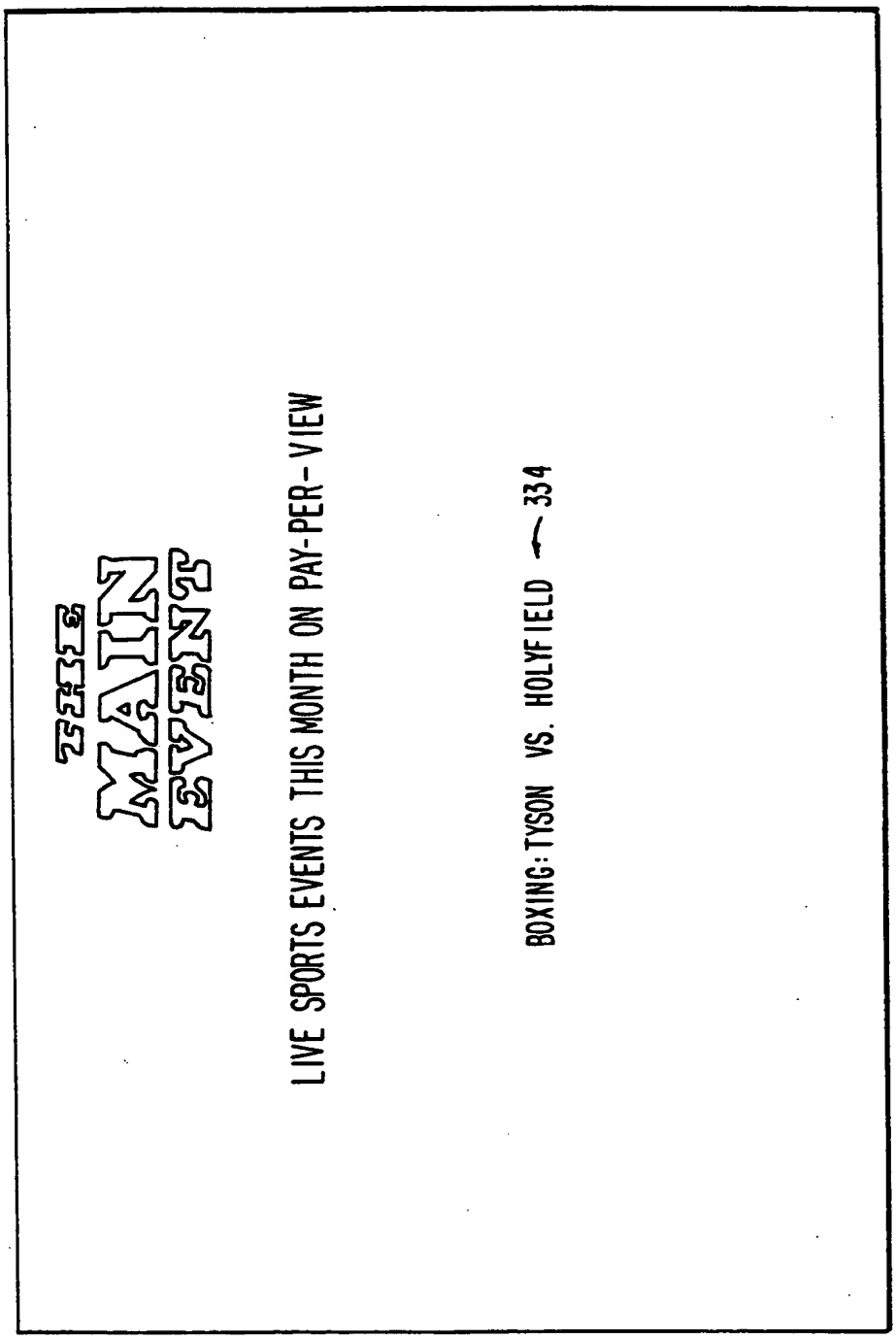

332
THE MAIN EVENT
LIVE SPORTS EVENTS THIS MONTH ON PAY-PER-VIEW
BOXING: TYSON VS. HOLYFIELD
334

FIG. 29

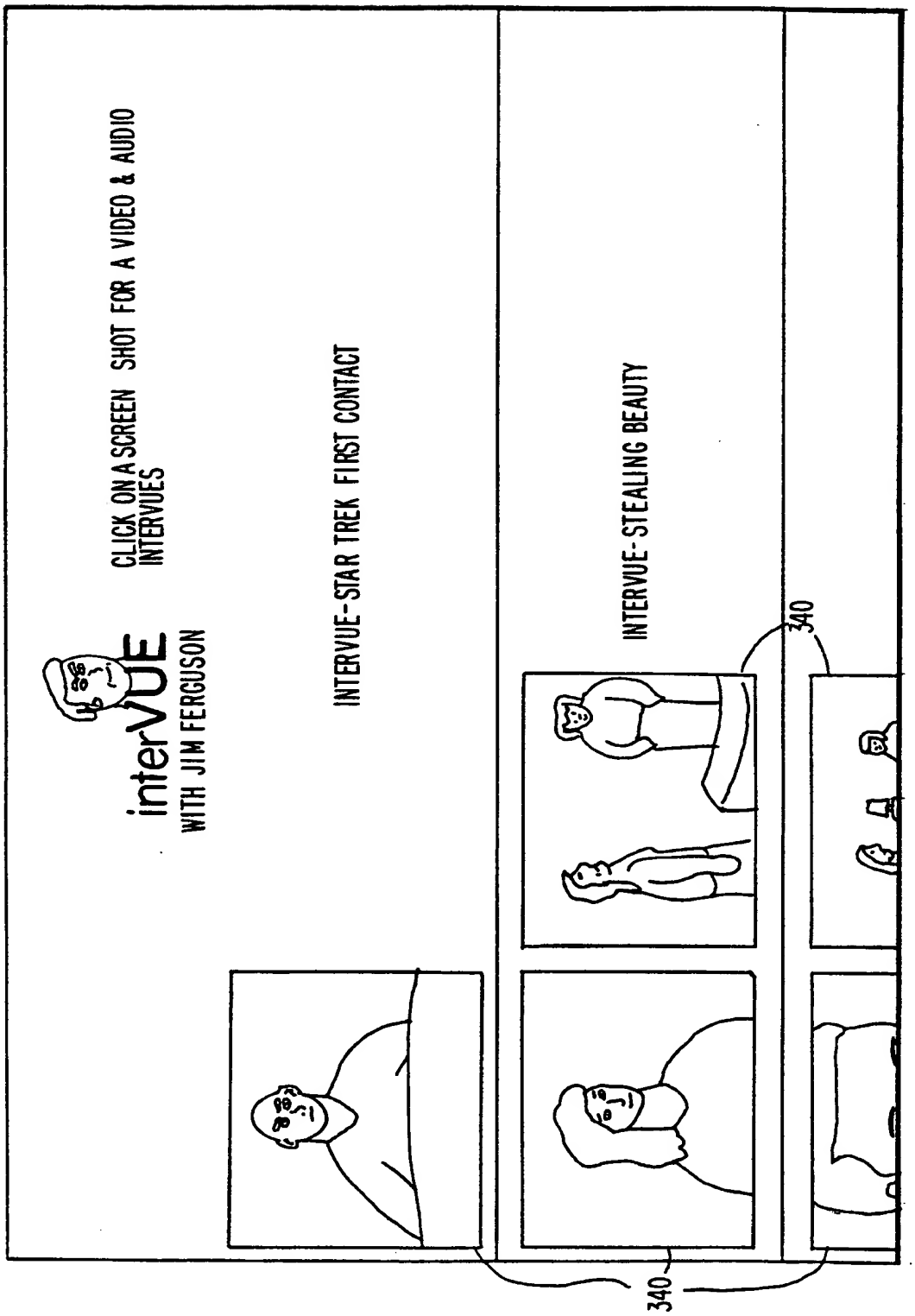

338
CLICK ON A SCREEN SHOT FOR A VIDEO & AUDIO INTERVUES
interVUE
WITH JIM FERGUSON
INTERVUE-STAR TREK FIRST CONTACT
INTERVUE-STEALING BEAUTY
340
340

FIG. 30

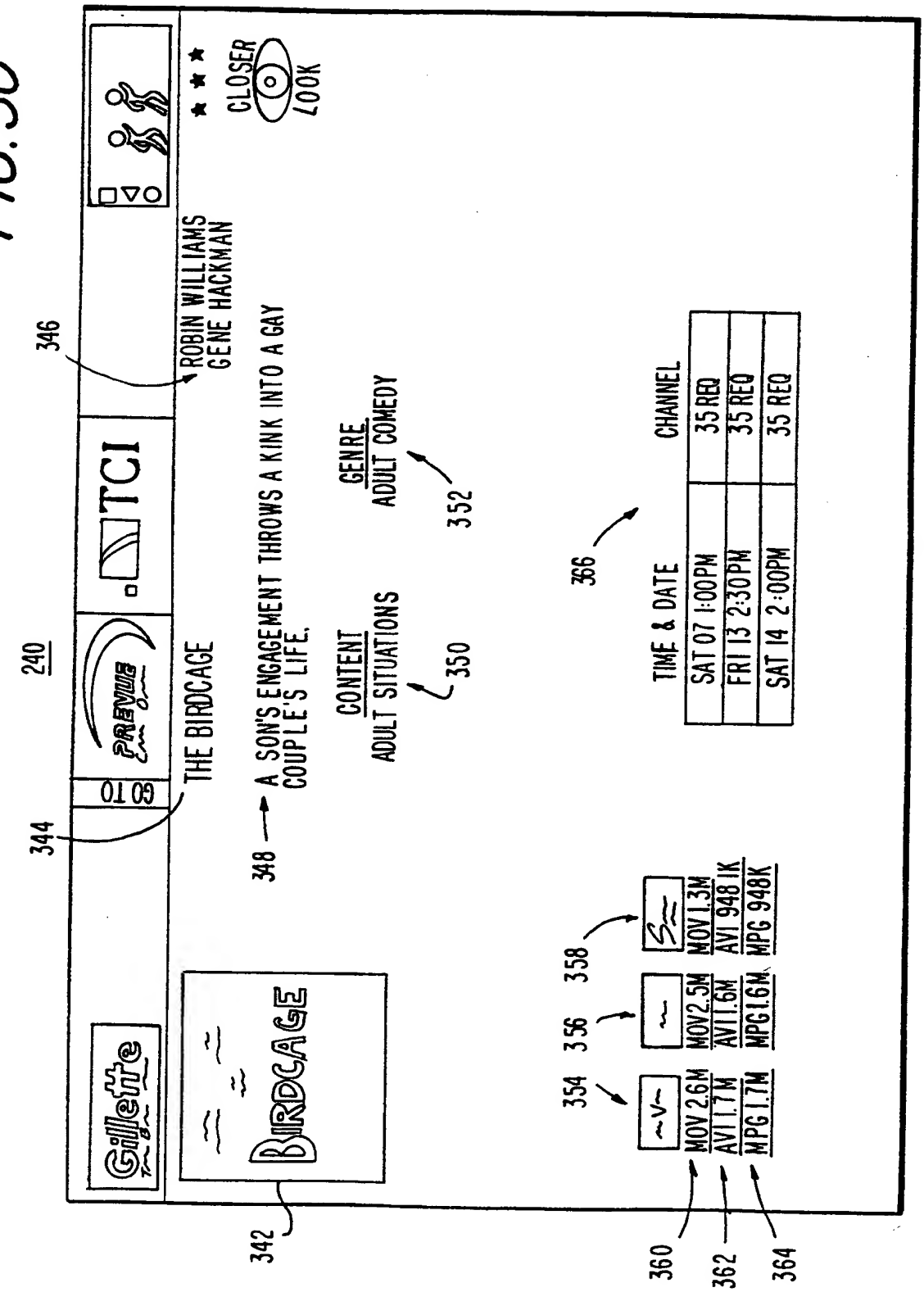

240
346
344
348
342
360
362
364
354
356
358
366
350
352
Gillette
BIRDCAGE
PREVUE
GO TO
TCI
THE BIRDCAGE
A SON'S ENGAGEMENT THROWS A KINK INTO A GAY COUPLE'S LIFE.
ROBIN WILLIAMS
GENE HACKMAN
★★★
CLOSER LOOK
CONTENT
ADULT SITUATIONS
GENRE
ADULT COMEDY
TIME & DATE
CHANNEL
SAT 07 1:00PM
FRI 13 2:30PM
SAT 14 2:00PM
35 REQ
35 REQ
35 REQ
MOV 2.6M
AVI 1.7M
MPG 1.7M
MOV 2.5M
AVI 1.6M
MPG 1.6M
MOV 1.3M
AVI 948 1K
MPG 948K

FIG. 31

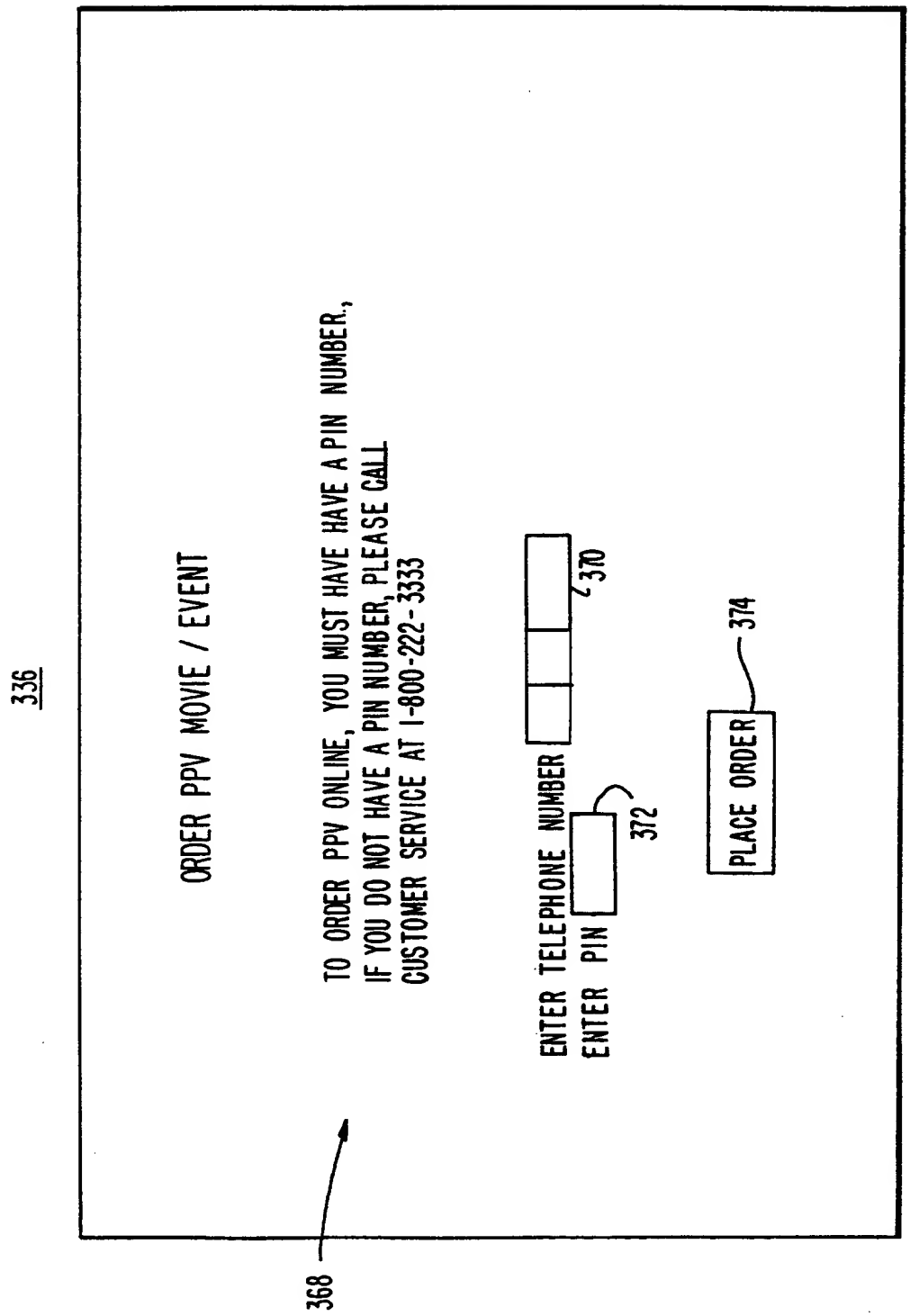

336
ORDER PPV MOVIE / EVENT
TO ORDER PPV ONLINE, YOU MUST HAVE HAVE A PIN NUMBER.,
IF YOU DO NOT HAVE A PIN NUMBER, PLEASE CALL
CUSTOMER SERVICE AT 1-800-222-3333
ENTER TELEPHONE NUMBER
ENTER PIN
370
372
374
PLACE ORDER
368

FIG. 32

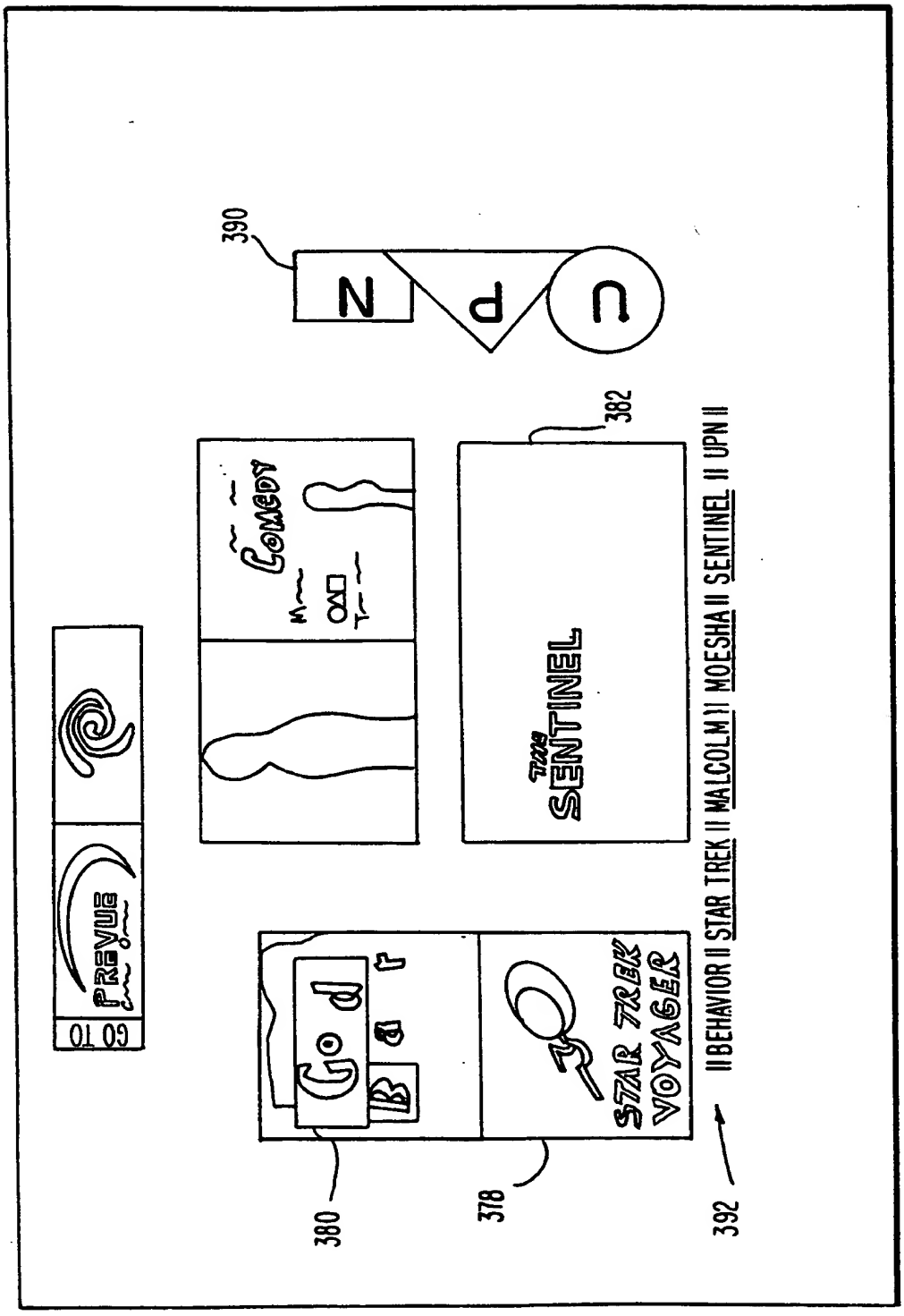
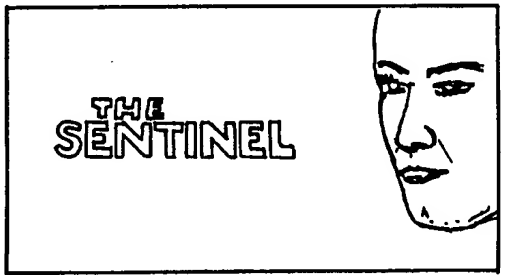

376
390
N
P
C
382
THE SENTINEL
COMEDY
PREVUE
GOTO
380
378
392
BEHAVIOR STAR TREK MALCOLM MOESHA SENTINEL UPN

FIG. 33

CLICK FOR VIDEO




PROGRAM OVERVIEW:

RUGGED POLICE DETECTIVE JAMES ELLISON (RICHARD BURGI) AND GOOD-NATURED ANTHROPOLOGIST GRADUATE STUDENT BLAIR SANDBURG (GARETT MAGGART) BECOME AN IMPROBABLE TEAM WHEN THE RENEGADE DETECTIVE DEVELOPS A DRAMATICALLY DIFFERENT ADVANTAGE - HIS FIVE SENSES ARE HEIGHTENED WILDLY BEYOND THAT OF AN ORDINARY HUMAN BEING - AND THE HIP, YOUNG GRAD KNOWS AN

THIS WEEK'S EPISODE

UPN - SENTINEL - TS211

TENSION RUNS HIGH AS ELLISON SEARCHES FOR A SERIAL BOMBER WHO IS TARGETING AFRICAN AMERICAN CHURCHES.

GUEST STARRING:

KIMBERLY ELISE AS CANDANCE BLAKE, KEN EARL AS CAPTAIN TAGGERT, MICHEL KOPSA AS DIRK LARSON, KIRK B.R. WOLLER AS ALEX



WO 98/26584 PCT/US97/22753

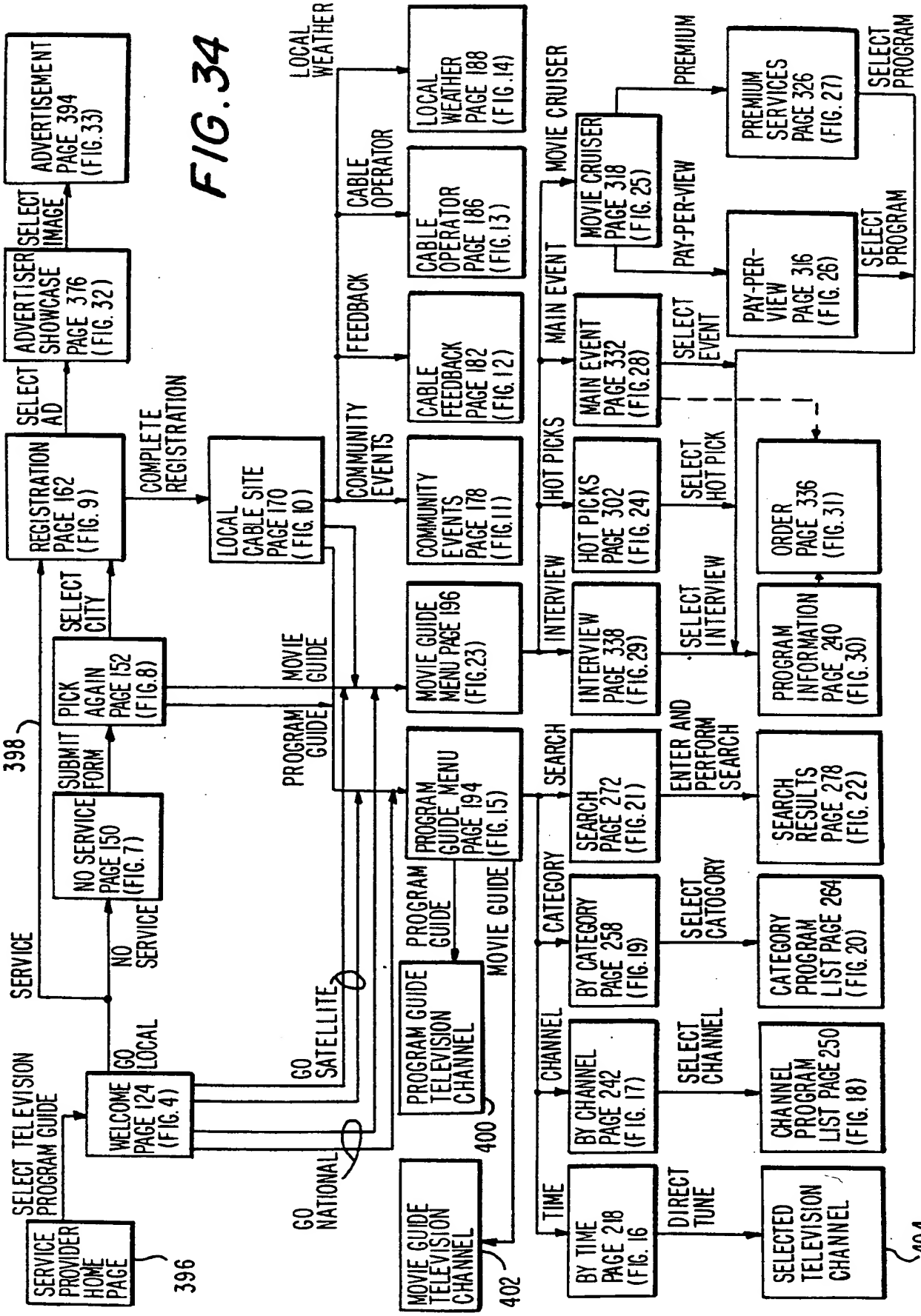

SELECT TELEVISION PROGRAM GUIDE
SERVICE PROVIDER HOME PAGE
396
WELCOME PAGE 124 (FIG. 4)
GO LOCAL
NO SERVICE
NO SERVICE PAGE 150 (FIG. 7)
SUBMIT FORM
PICK AGAIN PAGE 152 (FIG. 8)
SELECT CITY
REGISTRATION PAGE 162 (FIG. 9)
SELECT AD
ADVERTISER SHOWCASE PAGE 376 (FIG. 32)
SELECT IMAGE
ADVERTISEMENT PAGE 394 (FIG. 33)
SERVICE
398
COMPLETE REGISTRATION
LOCAL CABLE SITE PAGE 170 (FIG. 10)
LOCAL WEATHER
COMMUNITY EVENTS
FEEDBACK
CABLE OPERATOR
LOCAL WEATHER PAGE 188 (FIG. 14)
CABLE FEEDBACK PAGE 182 (FIG. 12)
CABLE OPERATOR PAGE 186 (FIG. 13)
COMMUNITY EVENTS PAGE 178 (FIG. 11)
MOVIE CRUISER
PREMIUM
MOVIE CRUISER PAGE 318 (FIG. 25)
PREMIUM SERVICES PAGE 326 (FIG. 27)
PAY-PER-VIEW
SELECT PROGRAM
PAY-PER-VIEW PAGE 316 (FIG. 26)
MAIN EVENT
SELECT EVENT
MAIN EVENT PAGE 332 (FIG. 28)
HOT PICKS
SELECT HOT PICK
HOT PICKS PAGE 302 (FIG. 24)
INTERVIEW
SELECT INTERVIEW
INTERVIEW PAGE 338 (FIG. 29)
ORDER PAGE 336 (FIG. 31)
PROGRAM INFORMATION PAGE 240 (FIG. 30)
MOVIE GUIDE
MOVIE GUIDE MENU PAGE 196 (FIG. 23)
PROGRAM GUIDE
PROGRAM GUIDE MENU PAGE 194 (FIG. 15)
SEARCH
ENTER AND PERFORM SEARCH
SEARCH PAGE 272 (FIG. 21)
SEARCH RESULTS PAGE 278 (FIG. 22)
CATEGORY
SELECT CATOGORY
BY CATEGORY PAGE 258 (FIG. 19)
CATEGORY PROGRAM LIST PAGE 264 (FIG. 20)
CHANNEL
SELECT CHANNEL
BY CHANNEL PAGE 242 (FIG. 17)
CHANNEL PROGRAM LIST PAGE 250 (FIG. 18)
TIME
DIRECT TUNE
BY TIME PAGE 218 (FIG. 16)
SELECTED TELEVISION CHANNEL
404
GO SATELLITE
GO NATIONAL
PROGRAM GUIDE TELEVISION CHANNEL
400
MOVIE GUIDE TELEVISION CHANNEL
402
PROGRAM GUIDE
MOVIE GUIDE

FIG. 34

# INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/US 97/22753

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04N5/445

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04N

Documentation searched other than minimumdocumentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | WO 96 27989 A (MULTIMEDIA SYSTEMS CORP) 12 September 1996<br>see page 7, line 12 - page 11, line 15; figures 1-5<br>see page 23, line 7 - page 26, line 27; claims 1-3; figure 11 | 1-3, 40-43,80 |
| A | WO 96 38962 A (SIEMENS AG ;STEIN KARL ULRICH (DE); HUSSMANN HEINRICH (DE); THEIME) 5 December 1996<br>see page 14, line 24 - page 17, line 25; figures 6-8 | 1-3, 41-43 |

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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| 28 April 1998 | 14/05/1998 |

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# INTERNATIONAL SEARCH REPORT

Int. ional Application No
PCT/US 97/22753

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication,where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | RATH K ET AL: "Set-top box control software: a key component in digital video" 1996 , PHILIPS JOURNAL OF RESEARCH, VOL. 1, NR. 50, PAGE(S) 185-199 XP002063594 see page 194-195, paragraph 5,5.2 see page 187, paragraph 2 ----- | 1,2,14, 16,41, 42,56 |

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

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| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| WO 9627989 A | 12-09-1996 | US 5612730 A | 18-03-1997 |
| | | AU 5177696 A | 23-09-1996 |
| | | CA 2214650 A | 12-09-1996 |
| | | EP 0813794 A | 29-12-1997 |
| WO 9638962 A | 05-12-1996 | EP 0830776 A | 25-03-1998 |

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G06F 17/30

A1

(11) International Publication Number: **WO 98/43183**

(43) International Publication Date: 1 October 1998 (01.10.98)

(21) International Application Number: PCT/US98/05684

(22) International Filing Date: 23 March 1998 (23.03.98)

(30) Priority Data:
08/827,035 25 March 1997 (25.03.97) US

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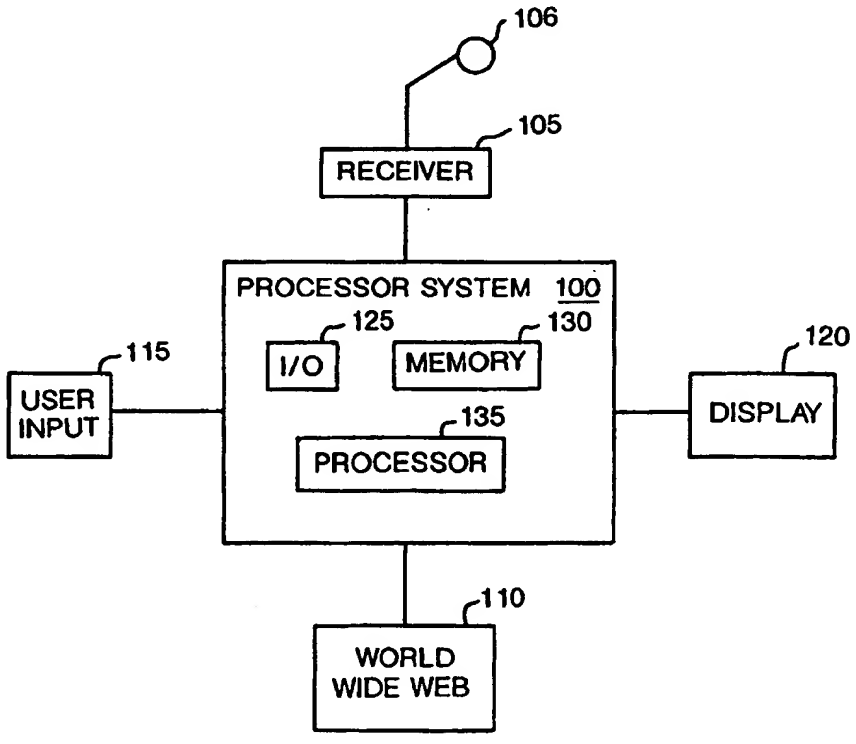
(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

**Published**
*With international search report.*
*Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

(54) Title: INTEGRATED SEARCH OF ELECTRONIC PROGRAM GUIDE, INTERNET AND OTHER INFORMATION RESOURCES

(57) Abstract

A power search tool that enables a user to search an electronic program guide and other information resources with one search. A search tool window (302) is displayed that enables a user to select filter elements (304) used to search. Alternately, in one embodiment, the filter elements (304) are automatically selected from predetermined program elements, such as title or subject, of a selected program in the electronic program guide. The search tool performs a search of the electronic program guide (306) and information resource and modifies the display of the electronic program guide (316) to identify those programs that are filtered from the search. Similarly, a window (324) displays information indicating those portions of the information resource that have been filtered during the search. Preferably the information resource is the world wide web and the URLs of the web sites that include information relative to the filter elements (304) are displayed. The user can then view the electronic program guide (320) and select broadcasts of programs to display as well as proceed to the web sites indicated simply by selection of the corresponding elements on the display.



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# INTEGRATED SEARCH OF ELECTRONIC PROGRAM GUIDE, INTERNET AND OTHER INFORMATION RESOURCES

## BACKGROUND OF THE INVENTION

### 1. FIELD OF THE INVENTION

The present invention is directed to a search utility that enables a user to search for and to access information from a variety of information resources.

### 2. ART BACKGROUND

Information is available from a variety of information resources. For example, a user can acquire information from the World Wide Web. In addition, many broadcasts, such as those sent via satellite and cables, include information regarding the broadcast that enables the construction of an electronic program guide that can be displayed on the broadcast display device or other display device.

Multimedia capability available on today's computers enable a user to view data as well as graphical information including video, audio or broadcast programs on the user's desktop. Thus, the desktop can consist of and access a variety of information resources. To search

these resources, the user often has to create and re-execute queries for each of the different types of resources available. This is quite cumbersome. It is therefore desirable to perform searches that can be carried across a variety of information platforms.

## SUMMARY OF THE INVENTION

The system and method of the present invention provides an integrated search tool for specifying and searching a variety of information resources. In one embodiment, the search tool is used for searching broadcast information and Internet information using a single user-initiated search. The search criteria can be saved as a filter, which can be executed at a later time. Results of the search are presented to the user. The user can then display available Web sites and/or an electronic program guide (EPG) containing program information that meets the search criteria. Via the EPG, broadcasts can be selected and displayed on the display. Thus, the user can access broadcast information and Internet information on the same search topic and criteria without performing multiple searches or recreating the search criteria.

## BRIEF DESCRIPTION OF THE DRAWINGS

The objects, features and advantages of the present invention will be apparent to one skilled in the art in the following detailed description in which:

Figure 1 is a simplified block diagram of the system that operates in accordance with the teachings of the present invention;

Figures 2 illustrates an exemplary search result of the power search tool of the present invention;

Figures 3a, 3b, and 3c present an overview of the functionality provided by the power search tool of the present invention;

Figure 4 illustrates steps performed to create a filter used to search broadcast information and Internet information in accordance with the teachings of the present invention;

Figure 5 illustrates the steps performed to activate a search; and

Figure 6 illustrates the steps performed to render on a display the query of the results of the search performed.

DETAILED DESCRIPTION

In the following description for purposes of explanation, numerous details are set forth in order to provide a thorough understanding of the present invention. However, it will be apparent to one skilled in the art that these specific details are not required in order to practice the present invention. In other instances, well known electrical structures and circuits are shown in block diagram form in order not to obscure the present invention unnecessarily.

A simplified block diagram of a system which incorporates the system of the present invention is illustrated in Figure 1. A variety of systems may be used. For example, a multimedia computer, such as the Sony PC manufactured by Sony Corporation may be utilized. The system 100 typically includes a central processing unit (CPU) 130, memory 135, input/output circuitry 125, as well as other circuitry and components that are well known to those skilled in the art. The system 100 will output information to a display 120 and, may also provide audio through speakers 126. The information may be received through receiver 105. Receiver 105 in one embodiment is a satellite receiver for receiving satellite transmissions of broadcasts and programming information through antenna 106. Using the programming information received through receiver 105, the system 100 can

generate an electronic program guide (EPG) on the display 120. As will be described below, the EPG can be modified or filtered according to the searching performed by the user using the power search tool described herein.

The user can provide input to the system 100 through a user input device 115 which may include a keyboard, mouse, remote control or other input device. The system 100 further has access to the Internet through Internet access 110, and also can access previously accessed and stored web pages. Using this access mechanism, which may be an Internet provider or other connection to the Internet, the user can search for external information including information available on the World Wide Web and previously broadcasted Web pages. It is readily apparent that the system is not limited to Internet access and can access a variety of external or internal resources including third party databases.

The display, as shown for example in Figure 2, can include a variety of information, such as web sites and television broadcasts. For example, referring to Figure 2, the display may include a program currently being broadcast in area 205, HTML frame 210, which may display a list of web sites or a particular web site 215, and/or electronic program guide of broadcast information 220, and a tool area, which enables the user to manipulate the information and resources used and the information

displayed including the power search tool that is described below. In the present embodiment, Window 210 is executing a Web browser application (such as Mosaic® or Netscape®) that uses a Yahoo® search engine to search the World Wide Web. The browser displays the search results of the query in the Window 210. Using the browser, the user can switch from one site to another seamlessly. Uniform resource locator (URL) information also is displayed; the integration is seamless as the user can select sites to view by selection of the corresponding URL or alternately via utilization of the browser or search engine. Window 220 adapts the EPG window to display the result of broadcast data query. Immediate tune-in is available by selection of a current EPG element in the Window 220.

An overview of the power search tool is illustrated in the flow diagram of Figure 3a, the diagram of Figure 3b and diagram of Figure 3c. The power search tool includes query tools for specifying and selecting the filter elements used to perform the search. The user can select the information sources to be searched, such as the World Wide Web and electronic program guide (EPG) information. In the present embodiment, the World Wide Web and EPG information are accessed; however, it is readily apparent that the resources can be expanded to include other resources, and furthermore, that one, some,

or all of the resources can be selected for searching. The user can also invoke commands to perform a search, stop a search, import information for performing the search, as well as maintaining logs of searches performed for subsequent references. Furthermore, the user can select what is to be searched and displayed, such that only web information is displayed, EPG information is only displayed, or all information is displayed.

Referring to Figure 3a, a user, using a search tool window 302 (e.g., window 375, Figure 3b), can establish the topics that form elements of a filter 304 that is input to a search engine 306. The search engine 306 interacts with the different information resources, e.g., internet 312, cable broadcast 310 and satellite broadcast 308, to generate a result set 314 of information. This set 314 is applied to the EPG 316 to modify the EPG 316 to display or highlight those programs that meet the filter requirements. These results are displayed in the EPG area 320 of the display 322. The display may be part of a television and/or processing device 326. Similarly the result set 314 can be sent to the browser 318 to provide the results of a web search in a browser or HTML based window 324. As noted earlier, the EPG can be used to tune to a broadcast by selection of an EPG element (e.g., program listing). The video is displayed in window 330 and the audio is preferably output through speakers 328.

Figure 3b illustrates one example of a display which includes the search tool of the present invention. The window 375 includes a topic area 340 in which the user can define the topic which is the subject of the filter. The present embodiment includes a listing 342 of previously used topics. This enables the user to easily select a prior topic. The listing 342 is preferably automatically updated to include each new topic as is it used by the user. The search tool also includes searching categories 344 and subcategories 346 which are selectable by the user. As is readily apparent, the system can be configured to include a variety of categories and corresponding subcategories. The sources to be searched 341 are also selectable. Other parameters included in the present embodiment are the program rating 340, program start time 342, program length 344 , program cost 343 and the web search engine utilized 347. Once the user selects to proceed with the search, e.g., using "go" button 348 the window is shifted to display the power search result window (e.g., window 210, Figure 2). The EPG is also updated to reflect those programs that meet the filter criteria (see e.g., window 220, Figure 2). In the present embodiment, filter button 349 is provided. The selection of the filter button brings up a subwindow (not shown) of additional filter features. For example, the user can save and recall the current and previously saved filter elements, respectively. The stop

button 350 allows the user to terminate the search if desired. Figures 3a and 3b illustrate one embodiment; the block diagram of Figure 3c illustrates a variety of features and functions that can be used.

In addition, the user can maintain filter logs that reflect the filter terms used to perform the search. These logs can be selected, such that the search can be re-performed at a later time. The first step in the process is the creation of a filter to be used. This process is described with reference to Figure 4. Text strings 401 are entered or selected for the topic list which indicate the topic or terms to be used to perform the search. In block 402, the text can be entered by typing in information, or importing information from the EPG 404, such as the current title of a program currently being broadcasted on the user's desktop display 205. Logical operators can be used 408 to combine multiple terms. An existing filter can be used 410 by selecting existing filters from the filter log 412. In addition, filters or search terms can be acquired from information associated with a broadcast 414. For example, information such as broadcast categories 415 (news, sports, drama, etc.), cost 416, rating 420, length 422, start time 424, and end time 426 are examples of parameters supplied by the broadcast system for generation of an electronic program guide. This information can be used to generate the filters used to

perform the search. All or some of these filters and terms can be used. The search is flexible to select one or a plurality of information resources. In the present embodiment, the user can select 428 to search the World Wide Web 430 or an electronic program guide 432. It is readily apparent to one skilled in the art that other resources may be used.

Once the filter is created, and the "Go" button is selected, the search is activated. The process is illustrated with respect to Figure 5. Commands 501 are used to specify certain parameters. After a search is initiated 502 using the active filter specified 504, the search mechanism conducts a search of the World Wide Web 506, and the EPG 508. At any time the search may be stopped 510; the filters added to the filter log 511, the present filter delete from the log 514 or edited 516, resulting in an updated filter log 518. Using the filter specified, the system automatically generates the query to perform the search on the web and/or on the EPG. This can be performed a number of ways recognized by those skilled in the art. For example, a script can be generated that executes the sequence of commands needed to access the web and perform the search using existing search engines or a specially created search engine. Similarly, the search is performed on the EPG using a search tool. The search tool

may be a simple text search tool or database search tool, or a tool specifically written for searching the EPG.

Once the search has been performed, the results are presented to the user. This is illustrated by the flow diagram of Figure 2 and the exemplary display shown in Figure 6. Referring to Figure 6, results can be formatted a number of ways. In the present embodiment, the result 604 of any web searches 605 are presented in an HTML frame 610 on the display. For example, if multiple web sites meet the search criteria, the user may be presented a listing of web sites with the ability to move a cursor over to a web site URL and select the URL to bring up the particular web site. Alternately, a first web site can be automatically brought to the user's display or multiple web sites can be displayed, and the user can go forward or back across the multiple sites inside the HTML window.

The results of the search performed on the electronic program guide 615 are displayed a variety of ways. For example, the EPG is modified to only display those programs that meet the search criteria. This is illustrated in Figure 2 in window 220. Alternatively, the areas of the EPG corresponding to programs that meet the criteria are highlighted by a different color. Furthermore, in one embodiment, the user is able to change the current broadcast 625 to one of the programs currently broadcast that meet the search criteria. For example, this might be

done by selecting a program from the modified EPG. Selection maybe achieved a variety of ways. For example, the user may indicate selection by using a remote control to enter the station number ID or by moving the cursor to point to the desired program. The system then responds by tuning to the program selected (the program being one of the programs that meets the search criteria).

In an alternative environment, the search is initiated in the background by the selection of a program in the EPG. Preferably, the filter elements of a selected program, such as a particular broadcasted program on the user's desktop display, are determined from selected program elements of the EPG. For example, providers of satellite broadcasts provide electronic program guide streams from which the receiver devices can generate electronic program guides visible to the user. This information typically includes the title, abstract of the program, duration of the program, time of broadcast, and lead actors in the program. Upon selection of a particular broadcast to view, a background search can automatically be initiated using all or some of the parameters of the program element information provided with the program. For example, if the broadcast is a movie called "X", a search initiated by title could bring up the web site about the "X" movie. Alternately, if the broadcast is a show directed to the subject of whales, for example, a search can

be initiated based on the abstract on the topic of whales, and web sites directed to that topic would automatically be provided to the user. Thus, the user would automatically receive information on a subject of interest from a variety of resources.

In either of the environments discussed above, the information associated with a broadcast can be more than just a sequence of keywords. Keywords can be combined with logical syntactic operators such as AND, OR and NOT to produce boolean combinations of search terms and to provide a more intelligent query. For example, a popular search engine is the one provided by the Alta Vista site www.altavista.digital.com. Either the simple query or advanced query syntax as documented at this site may be used. Other query syntax may be used.

Additionally, a complete search query can be provided in association with a broadcast. That is, a string of keywords combined with operators can be included in the EPG associated with a broadcast, included in the vertical blank interval of a broadcast signal itself, included in an Internet server "push" of data to the system of the present invention in association with a broadcast program, etc. That is, the search query can be formed at the content-provider end rather than having the system at the user end construct the query.

As another refinement, search results can be provided by the content-provider so that the receiving user system does not have to perform a search. This last approach has the advantage of eliminating the unrelated information that may turn up from an Internet search but has the drawback that a large amount of information in the form of URL information must be transmitted. Still, where the number of URLs transmitted is small, this last approach may be the most efficient.

In one embodiment, this search is performed in the background so as not to disturb foreground processes, such as display of a broadcast or video. If the search identifies related web sites, for example, a discreet animated alert is provided to the user, for example, in the user's tools area, enabling the user to selectively bring up the related web sites by selecting the alert. If the user selects to view the web sites, the web sites are then displayed in the HTML window provided on the user's desktop display.

The invention has been described in the context of a preferred embodiment. It is readily apparent to one skilled in the art that numerous alternatives, modification, variations and uses will be apparent to those skilled in the art in light of the foregoing description.

CLAIMS

What is claimed is:

1. A power searching method comprising the steps of:

providing a search tool window (302) that enables the generation of filter elements (304) for selectively searching an electronic program guide and at least one information resource;

selecting filter elements (304) for a search;

instituting a search of an electronic program guide (306) and the at least one information resource using the filter elements (304);

generating a result set (314) of search results;

applying the result set (314) to an electronic program guide window (316) to modify the guide to indicate those programs that meet the filter elements (304); and

generating an information resource window (324) displaying results of the search of the at least one information resource based upon the filter elements (304).

2. The method as set forth in claim 1, further comprising the step of

providing an audio/visual window (330) comprising a broadcast of a program.

3. The method as set forth in claim 2, further comprising the step of said user selecting a program to be

displayed in the audio/visual window (330) by selecting a program from the modified electronic program guide (320).

4. The method as set forth in claim 1, wherein the at least one information resource is the world wide web and the information resource window (324) displays a list of URLs of web sites that are part of the result set of search results.

5. The method as set forth in claim 1, wherein the at least one information resource is the world wide web and the information resource window (324) comprises a web browser that displays a list of URLs of web sites that are part of the result set of search results.

6. The method as set forth in claim 1, wherein the step of selecting filter elements (304) for a search is performed by a user.

7. The method as set forth in claim 1, wherein the step of selecting filter elements (304) for a search is automatically determined from program elements of a selected program from the electronic program guide (316).

8. The method as set forth in claim 7, wherein the step on initiating a search is performed in the background when a broadcasted program is selected for display.

9. In a system comprising a processor (130), memory (135) and a display (120), a power search tool comprising:

an electronic program guide window (220) comprising an electronic program guide;

a search tool window (302) configured to enable the generation of filter elements (304) for selectively searching an electronic program guide and at least one information resource; and

logic configured to search the electronic program guide (306) apply the result set to the electronic program guide window (316) to modify the electronic program guide displayed (320) to indicate those programs that meet the filter elements (304) and to generate an information resource window (324) displaying results of the search of the at least one information resource based upon the filter elements (304).

10. The system as set forth in claim 9, further comprising an audio/visual window (330) comprising a broadcast of a program.

11. The system as set forth in claim 9, wherein the at least one information resource is the world wide web and the information resource window (324) displays a list of URLs of web sites that are part of the result set of search results.

12. The system as set forth in claim 9, wherein the at least one information resource is the world wide web and the information resource window (324) comprises a web browser that displays a list of URLs of web sites that are part of the result set of search results.

13. The system as set forth in claim 9, wherein the logic is further configured to automatically select filter elements (304) for a search from program elements of a selected program from the electronic program guide.

14. The system as set forth in claim 13, further comprising an audio/visual window (330) comprising a broadcast of a program, wherein the logic is further configured to initiate a search in the background when a broadcasted program is selected for display in the audio/visual window (330).

15. A computer readable medium containing executable instructions which, when executed in a processing system, causes the system to perform the steps for performing a power search of an electronic program guide and at least one information resource, comprising:

selecting filter elements (304) for a search;

instituting a search of an electronic program guide (306) and the at least one information resource using the filter elements (304);

generating a result set (314) of search results;

applying the result set (314) to an electronic program guide window (316) to modify the guide to indicate those programs that meet the filter elements (304); and

generating an information resource window (324) displaying results of the search of the at least one information resource based upon the filter elements (304).

16. The computer readable medium as set forth in claim 15, containing further executable instructions which, when executed in the processing system comprise providing an audio/visual window (330) comprising a broadcast of a program.

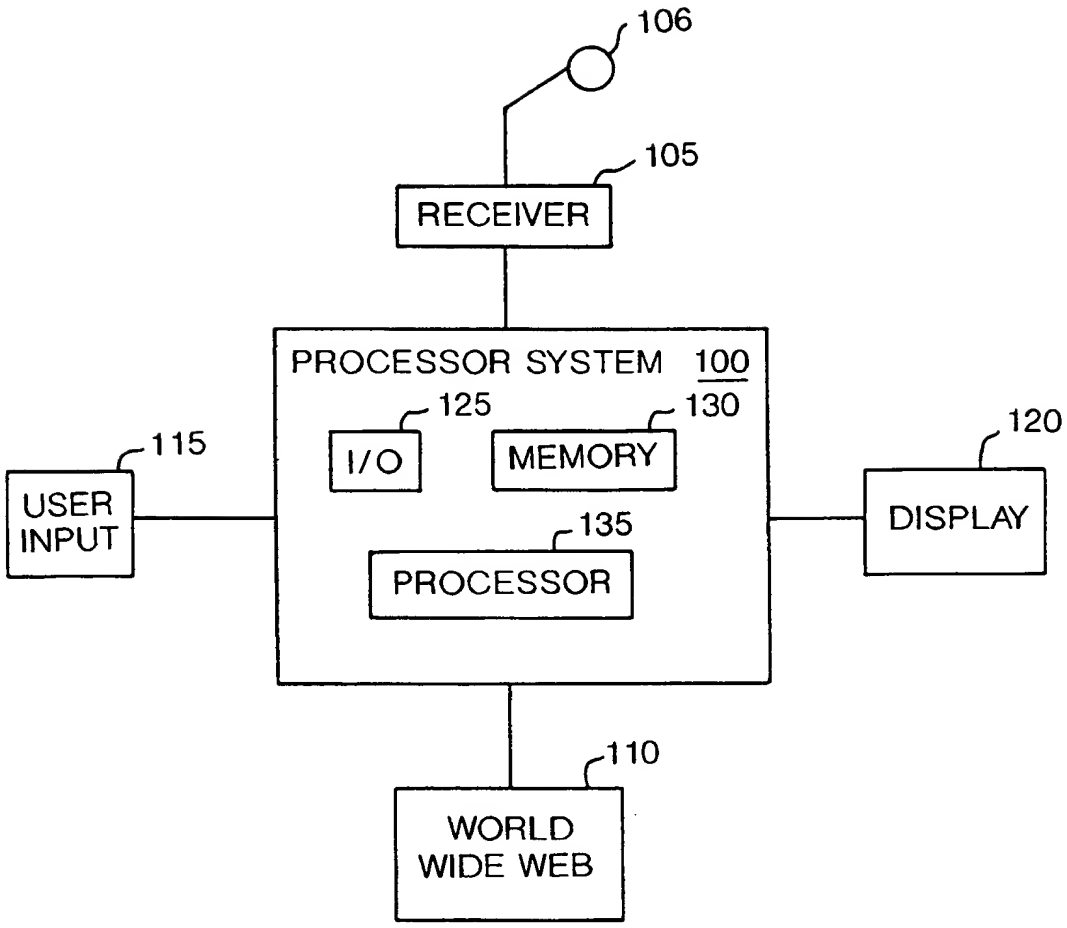
17. The computer readable medium as set forth in claim 15, wherein the at least one information resource is the world wide web and the information resource window (324) displays a list of URLs of web sites that are part of the result set of search results.

18. The computer readable medium as set forth in claim 15, wherein the at least one information resource is the world wide web and the information resource window (324) comprises a web browser that displays a list of URLs of web sites that are part of the result set of search results.

19. The computer readable medium as set forth in claim 15, wherein said instructions for selecting filter elements (304) for a search comprises instructions, which

when executed by the system, automatically determines filter elements (304) from program elements of a selected program from the electronic program guide (316).

20. The computer readable medium as set forth in claim 19, wherein the instruction for initiating a search is executed in the background when a broadcasted program is selected for display.


106
105
RECEIVER
PROCESSOR SYSTEM 100
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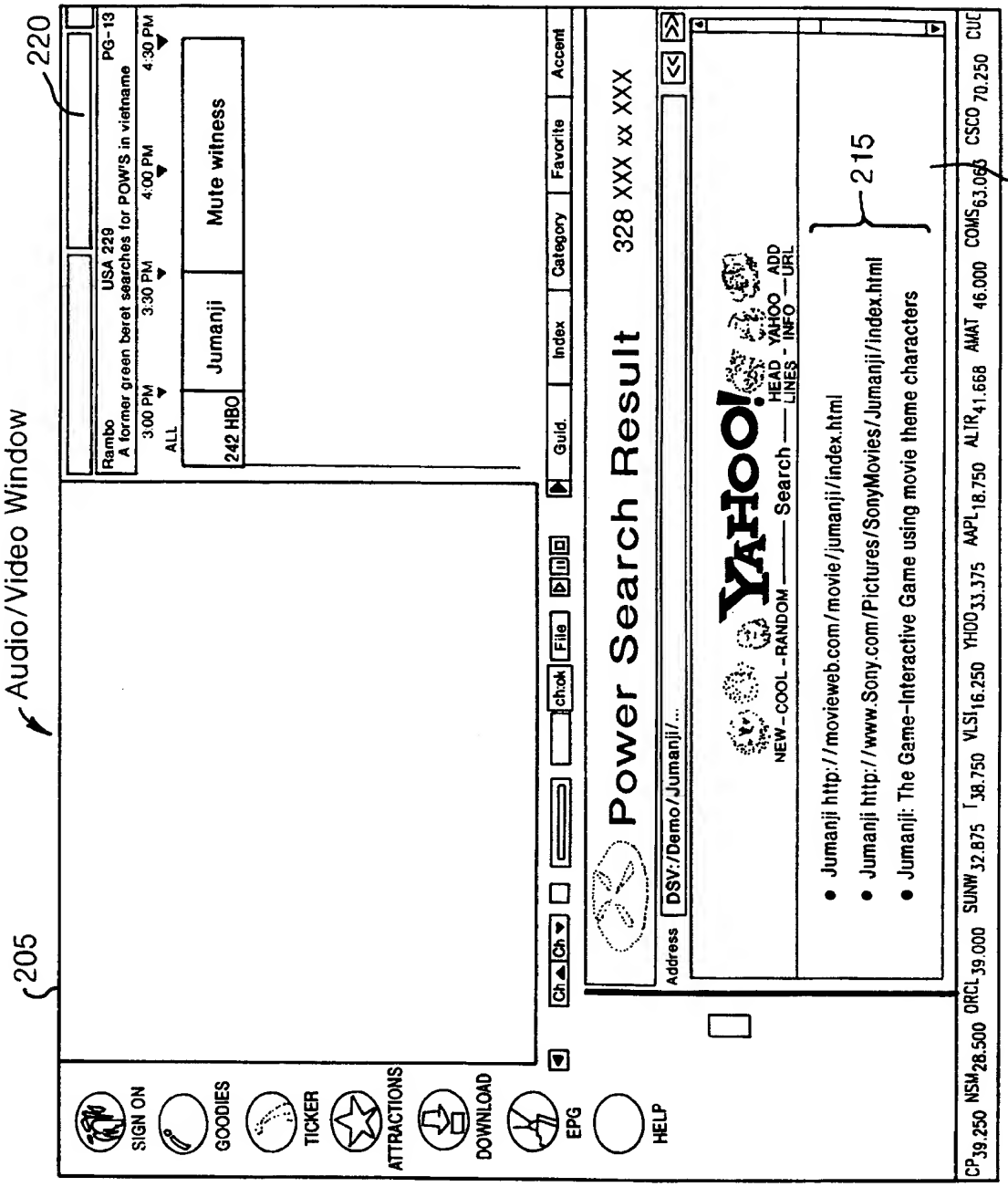
130
MEMORY
135
PROCESSOR
115
USER INPUT
120
DISPLAY
110
WORLD WIDE WEB

FIG. 1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Favorite
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NEW - COOL - RANDOM
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Jumanji http://movieweb.com/movie/jumanji/index.html
Jumanji http://www.Sony.com/Pictures/SonyMovies/Jumanji/index.html
Jumanji: The Game-Interactive Game using movie theme characters
210
CP 39.250 NSM 28.500 ORCL 39.000 SUNW 32.875 38.750 VLSI 16.250 YHOO 33.375 AAPL 18.750 ALTR 41.668 AMAT 46.000 COMS 63.063 CSCO 70.250 CUC

FIG. 2

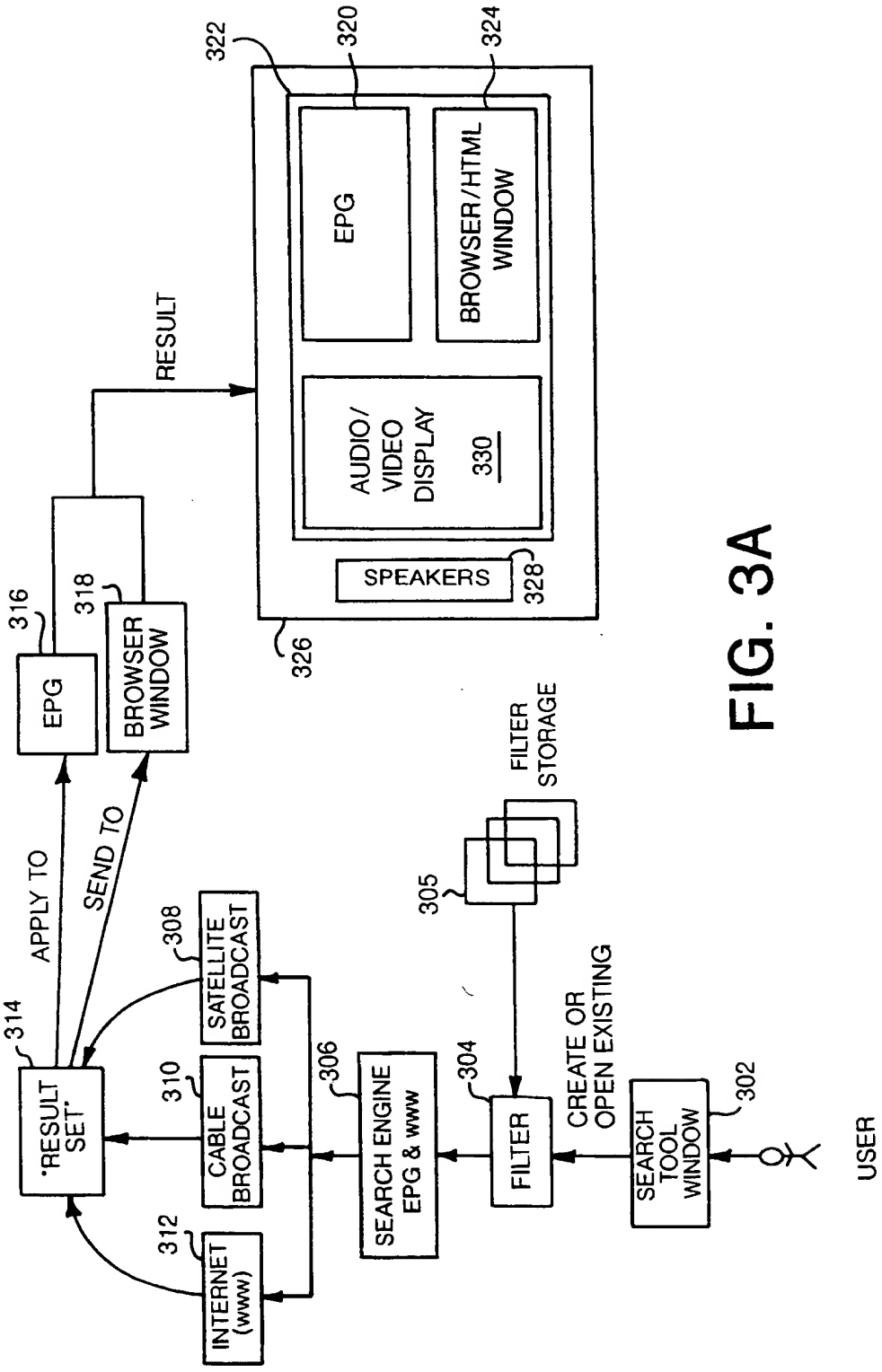
322
320
324
EPG
BROWSER/HTML WINDOW
AUDIO/ VIDEO DISPLAY
330
SPEAKERS
328
326
RESULT
316
318
EPG
BROWSER WINDOW
APPLY TO
SEND TO
314
'RESULT SET'
308
SATELLITE BROADCAST
310
CABLE BROADCAST
312
INTERNET (www)
306
SEARCH ENGINE EPG & www
305
FILTER STORAGE
304
FILTER
CREATE OR OPEN EXISTING
SEARCH TOOL WINDOW
302
USER

FIG. 3A

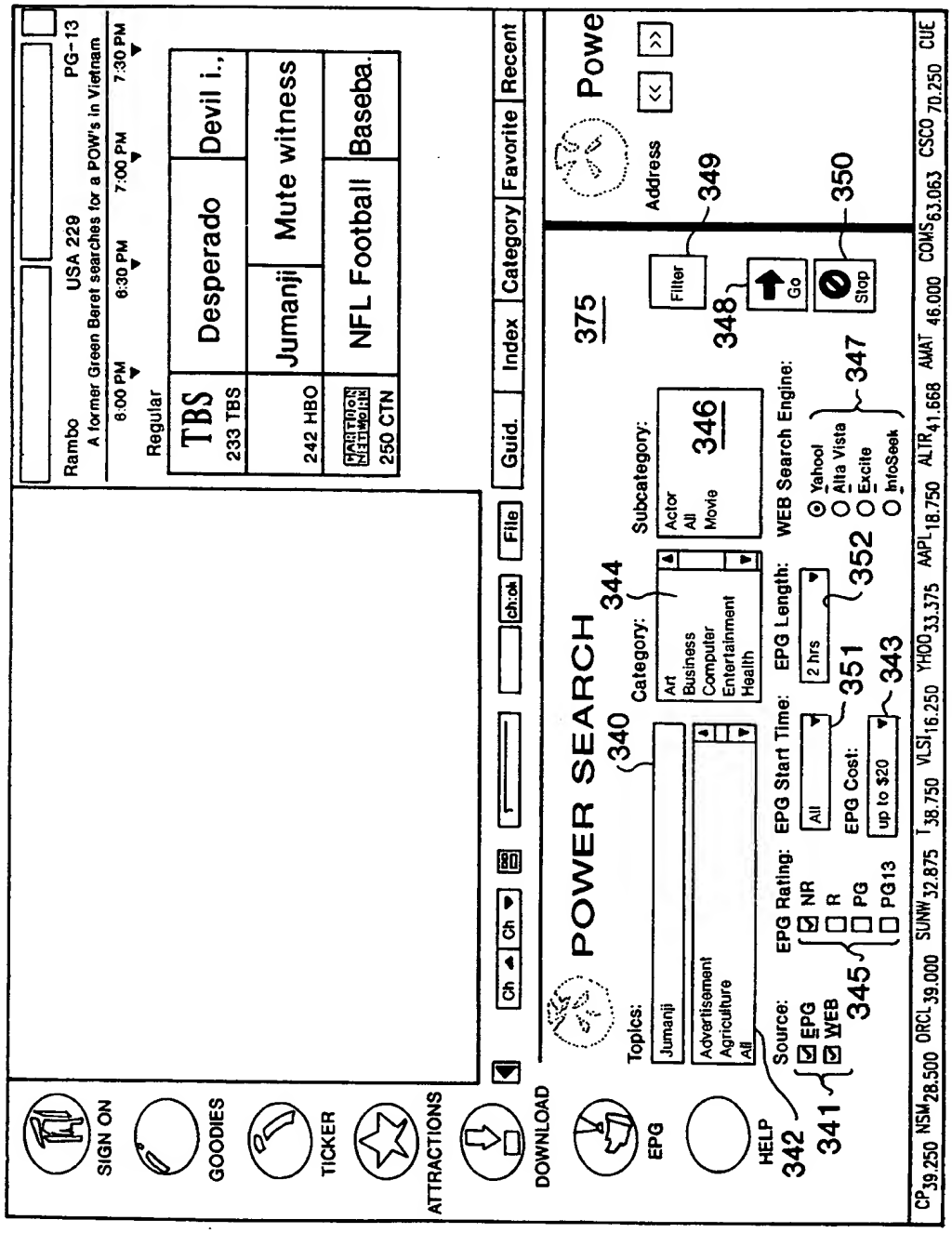
SIGN ON
GOODIES
TICKER
ATTRACTIONS
DOWNLOAD
EPG
HELP
Rambo
USA 229
PG-13
A former Green Beret searches for a POW's in Vietnam
8:00 PM
6:30 PM
7:00 PM
7:30 PM
Regular
TBS
233 TBS
Desperado
Devil i..
242 HBO
Jumanji
Mute witness
250 CTN
NFL Football
Baseba.
Guid.
Index
Category
Favorite
Recent
File
Ch:ch
Ch
POWER SEARCH
375
340
Topics:
Jumanji
Advertisement
Agriculture
All
344
Category:
Art
Business
Computer
Entertainment
Health
Subcategory:
Actor
All
Movie
346
348
Filter
Go
Stop
349
350
Address
Powe
WEB Search Engine:
Yahoo
Alta Vista
Excite
InfoSeek
347
Source:
EPG
WEB
341
342
345
EPG Rating:
NR
R
PG
PG13
EPG Start Time:
All
EPG Cost:
up to $20
351
352
343
EPG Length:
2 hrs
CP 39.250 NSM 28.500 ORCL 39.000 SUNW 32.875 T 38.750 VLSI 16.250 YHOO 33.375 AAPL 18.750 ALTR 41.668 AMAT 46.000 COMS 63.063 CSCO 70.250 CUE

FIG. 3B

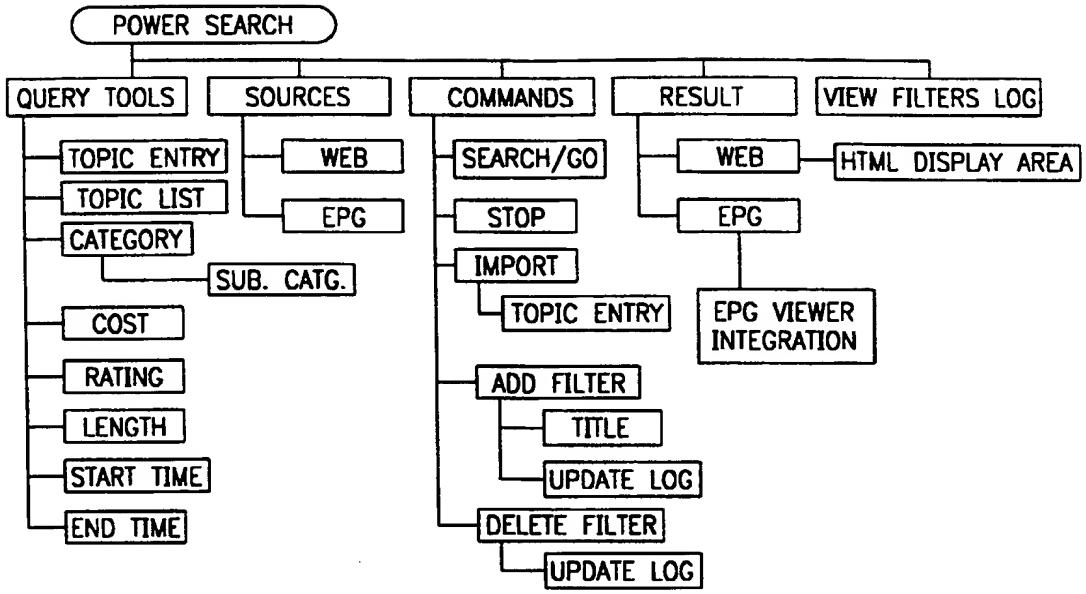
POWER SEARCH
QUERY TOOLS
SOURCES
COMMANDS
RESULT
VIEW FILTERS LOG
TOPIC ENTRY
TOPIC LIST
CATEGORY
SUB. CATG.
COST
RATING
LENGTH
START TIME
END TIME
WEB
EPG
SEARCH/GO
STOP
IMPORT
TOPIC ENTRY
ADD FILTER
TITLE
UPDATE LOG
DELETE FILTER
UPDATE LOG
WEB
HTML DISPLAY AREA
EPG
EPG VIEWER INTEGRATION

FIG. 3C

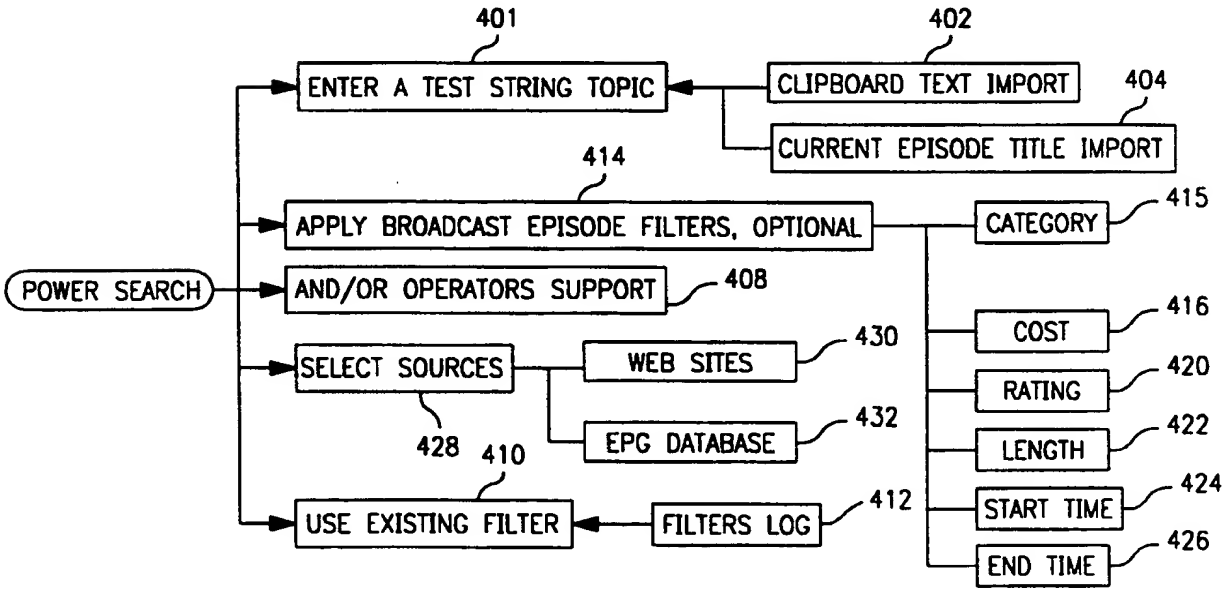
401
402
ENTER A TEST STRING TOPIC
CLIPBOARD TEXT IMPORT
404
CURRENT EPISODE TITLE IMPORT
414
APPLY BROADCAST EPISODE FILTERS, OPTIONAL
415
CATEGORY
POWER SEARCH
AND/OR OPERATORS SUPPORT
408
416
COST
SELECT SOURCES
WEB SITES
430
420
RATING
428
410
EPG DATABASE
432
422
LENGTH
424
START TIME
USE EXISTING FILTER
FILTERS LOG
412
426
END TIME

FIG. 4

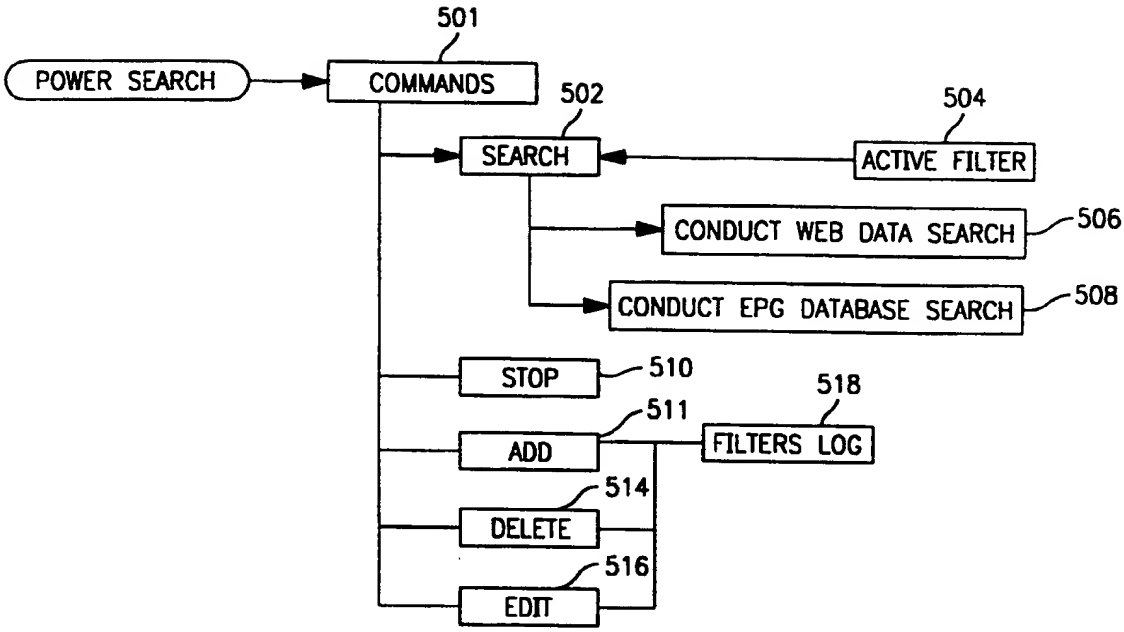
501
POWER SEARCH
COMMANDS
502
SEARCH
504
ACTIVE FILTER
CONDUCT WEB DATA SEARCH
506
CONDUCT EPG DATABASE SEARCH
508
STOP
510
511
518
ADD
FILTERS LOG
514
DELETE
516
EDIT

FIG. 5

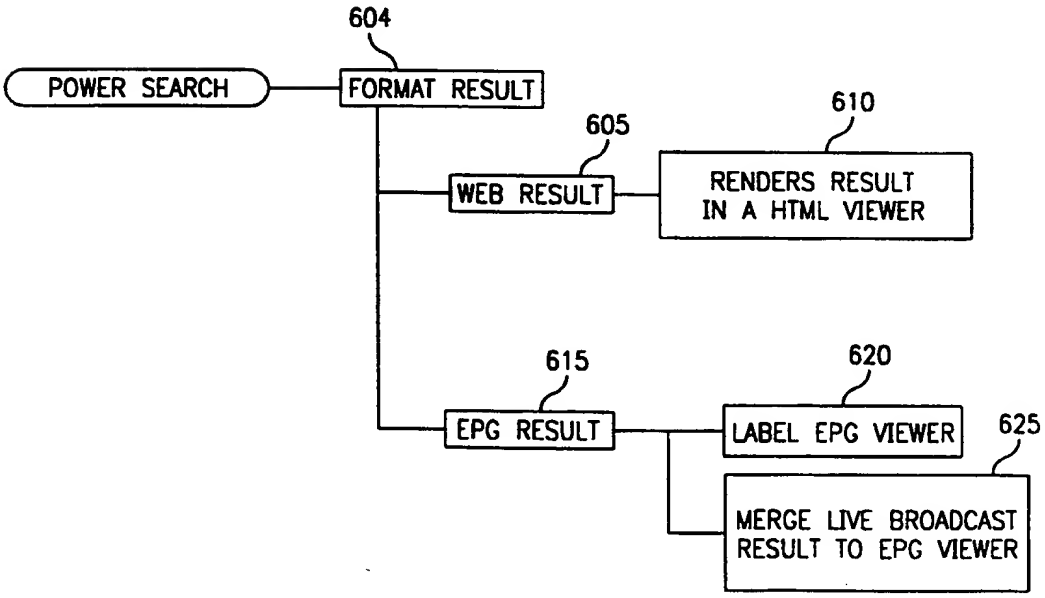
604
POWER SEARCH
FORMAT RESULT
605
610
WEB RESULT
RENDERS RESULT
IN A HTML VIEWER
615
620
625
EPG RESULT
LABEL EPG VIEWER
MERGE LIVE BROADCAST
RESULT TO EPG VIEWER

FIG. 6

# INTERNATIONAL SEARCH REPORT

Int ational Application No
PCT/US 98/05684

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | EHRMANTRAUT M ET AL: "The personal electronic program guide-towards the pre-selection of individual TV programs" PROCEEDINGS OF THE 1996 ACM CIKM. INTERNATIONAL CONFERENCE ON INFORMATION AND KNOWLEDGE MANAGEMENT, PROCEEDINGS OF 5TH INTERNATIONAL CONFERENCE ON INFORMATION AND KNOWLEDGE MANAGEMENT, ROCKVILLE, MD, USA, 12-16 NOV. 1996, ISBN 0-89791-873-8, 1996, NEW YORK, NY, USA, ACM, USA, pages 243-250, XP002071337 see the whole document<br>---<br>-/-- | 1,9,15 |

[X] Further documents are listed in the continuation of box C.

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|---|---|
| 13 July 1998 | 27/07/1998 |

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# INTERNATIONAL SEARCH REPORT

Int. ational Application No
PCT/US 98/05684

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication,where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | YOUNG-WOO PARK ET AL: "A new generation method of a user profile for information filtering on the Internet" PROCEEDINGS. TWELFTH INTERNATIONAL CONFERENCE ON INFORMATION NETWORKING (ICOIN-12) (CAT. NO.98EX104), PROCEEDINGS TWELFTH INTERNATIONAL CONFERENCE ON INFORMATION NETWORKING (ICOIN-12), TOKYO, JAPAN, 21-23 JAN. 1998, ISBN 0-8186-7225-0, 1998, LOS ALAMITOS, CA, USA, IEEE COMPUT. SOC, USA, pages 261-264, XP002071338 see the whole document | 1,9,15 |
| A | WO 96 34486 A (TV GUIDE ON SCREEN) 31 October 1996 see abstract | 1,9,15 |

1

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# INTERNATIONAL SEARCH REPORT

information on patent family members

Inte onal Application No
PCT/US 98/05684

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| WO 9634486 A | 31-10-1996 | US 5666645 A | 09-09-1997 |
| | | AU 5631396 A | 18-11-1996 |
| | | EP 0823176 A | 11-02-1998 |

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

| (51) International Patent Classification 6 : H04N | A2 | (11) International Publication Number: WO 98/48566 |
|---|---|---|
| | | (43) International Publication Date: 29 October 1998 (29.10.98) |

(21) International Application Number: PCT/US98/08305

(22) International Filing Date: 20 April 1998 (20.04.98)

(30) Priority Data:

| | | |
|---|---|---|
| 60/044,161 | 21 April 1997 (21.04.97) | US |
| 60/052,248 | 11 July 1997 (11.07.97) | US |

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(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: MANKOVITZ, Roy, J. [US/US]; 18057 Medley Drive, Encino, CA 91316 (US).

(74) Agent: RAHN, LeRoy, T.; Christie, Parker & Hale, LLP, P.O. Box 7068, Pasadena, CA 91109–7068 (US).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

**Published**

*Without international search report and to be republished upon receipt of that report.*

(54) Title: METHOD AND APPARATUS FOR TIME–SHIFTING VIDEO AND TEXT IN A TEXT–ENHANCED TELEVISION PROGRAM

(57) Abstract

A television system allows a viewer of a text–enhanced television program to pause the program at a particular frame, browse the enhancements at his or her leisure, and then resume viewing the program from that frame, without losing continuity of the video and enhancement portions of the program or program content. This is accomplished by time–shifting the television program for later playback.

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# METHOD AND APPARATUS FOR TIME-SHIFTING VIDEO AND TEXT IN A TEXT-ENHANCED TELEVISION PROGRAM

## CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of provisional patent application serial no. 60/044,161, filed April 21,1997, and provisional patent application serial no. 60/052,248, filed July 11, 1997, the disclosures of which are hereby fully incorporated by reference.

## BACKGROUND

The present invention is a system wherein television program-related information (PRI) is embedded in the vertical blanking interval (VBI) of a television signal for display on a viewer's television screen at the same time as the television program. The PRI is typically contained in an Internet site, the addresses for which are embedded in the television signal. The Internet site addresses may also be transmitted synchronously with, but separate from the video portion, e.g., via an interface device such as a telephone or cable modem. Typically such an "enhanced" television program consists of a display with the video portion of the program in a picture-in-picture (PIP) window and the PRI in the remaining portion of the display area of the television screen.

This PRI may be any textual or graphic information associated with the current television program. The PRI may consist of a textual display of a World Wide Web (WWW) or other Internet site address to which the viewer can choose to link to through a connection with an Internet Service Provider. Alternatively, the PRI may be contained in one or more Web pages, the addresses of which are inserted into the vertical blanking interval (VBI) and are automatically retrieved by the user's terminal and displayed on the display screen. Some examples of PRI are cast members' biographies, trivia about the show, information relating to the particular episode or scene, and closeups of information that cannot be readily seen or is hidden in the video portion of the program. Some of the PRI may be time dependent on the program. For example, the PRI may change to correspond to a particular scene or frame of

the television program.

With so much information on the screen, some of which may be changing at a fairly rapid pace, it is desirable to provide the viewer the option of pausing a particular frame of a text-enhanced program display and then resume viewing the program without losing continuity of the video and PRI portions of the program or program content.

According to one embodiment of the invention, a television system is provided which allows a viewer of a PRI-enhanced television program to pause the program at a particular frame, examine the PRI at his or her leisure, perhaps browse through other, linked Web pages, and then resume viewing the program from that frame, without losing continuity of the video and PRI portions of the program or program content.

SUMMARY

According to one embodiment of the invention, an apparatus for time-shifting video and program related information (PRI) in an enhanced television program is provided which includes a display screen, a tuner for receiving a television signal with embedded data representative of an address for an Internet site including PRI, means for extracting the embedded data from the television signal, a memory for storing the embedded data, input means for inputting viewer commands, a time-shifting apparatus capable of simultaneously storing the television signal as it is received and outputting the stored television signal for display, means for communicating with an Internet service provider to retrieve information from the Internet site including the PRI, and a microcontroller. The microcontroller is configured to retrieve the Internet site address from memory and retrieve the PRI from the Internet site in response to a first viewer command, generate a composite display including a television program contained in the television signal in a first portion of the display and the PRI in a second portion of the display in response to the first viewer command, control the time-shifting apparatus to store the television signal as it is received and display a still frame from the stored television signal in a first portion of the display screen in response to a

second viewer command, and control the time-shifting apparatus to output the portion of the stored television signal subsequent to the still frame for display in the first portion of the display in response to a third viewer command.

According to another embodiment, a method for time-shifting video and program related information (PRI) in an enhanced television program is provided which includes the steps of receiving a television signal with embedded data representative of an address for an Internet site including PRI, extracting the embedded data from the television signal, storing the embedded data in a memory, selecting an Internet mode in response to a first viewer command, communicating with an Internet service provider to retrieve information from the Internet site including the PRI, displaying a television program contained in the television signal in a first portion of a display screen and the PRI in a second portion of the display screen, storing the television signal in a time-shifting apparatus and continuously displaying a still frame from the stored television signal in response to a second viewer command, and simultaneously displaying the television program subsequent to the still frame from the stored television signal and continuing to store the television signal as it is received in response to a third viewer command.

According to an alternate embodiment, one or more suspend flags are embedded in the television signal, and the "pause" operation wherein the television signal is stored in the time-shifting apparatus and the still frame displayed in response to detection of such a suspend flag. This feature may be deactivated such that the "pause" operation is only performed in response to a viewer command.

## BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing features and advantages of the invention will be better understood by referring to the following drawings:

FIG. 1 is a schematic block diagram of a time-shifting apparatus according to one embodiment of the invention;

FIG. 2 is a display screen in an Internet mode of the time-shifting apparatus;

FIG. 3 is a display screen accessed by the viewer from the display screen of FIG. 2; and

FIG. 4 is an alternate layout of the display screens of FIGS. 2 and 3.

DETAILED DESCRIPTION

In FIG. 1, the reference numerals refer to the same elements described in application Serial No. 08/475,395 filed on June 6, 1995, the disclosure of which is incorporated fully herein by reference. In addition, the system includes 1) an Internet service provider 33 connected to microprocessor 24 by a transmission link 34 such as a telephone network or a television cable. 2) a VBI decoder 35, 3) a website data memory 36 (memory 36 could be part of the RAM of microprocessor 24 or in terms of the disclosure of the '395 application, memory 22), and 4)a digital Storage Device 52 with associate analog-to-digital and digital-to-analog converters 50, 54. An interface device such as a telephone or cable modem (not shown) couples transmission link 34 to microprocessor 24, if necessary. Internet service provider 33 is connected to an Internet backbone in well known fashion to access data at any site on the WWW.

Storage device 52 is a television signal time-shifting apparatus. One such time-shifting apparatus is disclosed in U.S. patent application Serial No. 08/388,345 to Russo, et al. filed February 14, 1995, which is fully incorporated herein. Such a time-shifting apparatus includes an optical disc for storage of video programs and separate READ and WRITE heads which operate simultaneously such that real time program information can be stored on the disc while previously stored information on the disc can be read and output to the television signal for display. Other storage media which are capable of rapidly storing extremely large amounts of information may also be used, including magnetic tape, optical disk, magneto-optical disk, or solid state memory (i.e., a high capacity charge coupled device), video RAM, etc.

The Storage Device 52 holds a large video data buffer (not shown) for storing the television program in digital form. Preferably, the Storage Device is a random access storage medium allowing concurrent reading and writing operations, so that the incoming television signal data may be written to the Storage Device while earlier stored television signal data is being read out for display on TV 20 (that is, time-shifting of the television signal data is performed). The Storage Device 52 has two heads that are separately positionable. When display of the television program is to be suspended, the read head is kept in the same position until a resume command is received. The write head, however, keeps moving to record the incoming television signal data.

To enable a television viewer to access information about a television program that the viewer is watching, PRI is embedded in the VBI of the television signal carrying the television program. For example, the PRI may be textual information regarding actors and actresses in the show, advertisements of program-related merchandise, brief descriptions of the plot of future episodes of the television program, or any other text regarding the television program, or the PRI may be text representing web pages containing such information.

According to a preferred embodiment, the PRI is contained on a web page, the address for which is embedded in the VBI of the television signal. When the television signal carrying the program being watched is captured by tuner 11, the website data embedded in its VBI is stripped out by VBI decoder 35 and sent to microprocessor 24 for storage in website data memory 36. The memory addresses of the website names are linked to the website addresses in memory 36. An icon appears on the screen of television 20 when the television program is displayed full screen, i.e., in the TV mode, to inform the viewer that website data accompanies the television signal and is stored in memory 22. If the viewer wishes to access a website in connection with the television program, the viewer presses a button on a viewer input device 28 such as a remote controller, which introduces the Internet mode of operation shown in FIG. 2 and described below. Microprocessor 24 is programmed to carry out this operation. By repeatedly pressing a button on the viewer input device, the viewer can toggle

back and forth between the TV mode and the Internet mode. Although viewer inputs are discussed herein as initiated by buttons on a remote controller, other input devices can also be used. For example, a cursor could be displayed on the television screen which is movable around the screen and a selection can be made (i.e., "clicked") when the cursor is in a desired location of the screen.

In the Internet mode, the video portion of the television program last viewed in the TV mode is displayed in area 42. As an option, a textual description of the program is displayed in an area 44 and information about the television program, i.e., program title, station name, and channel number are displayed in a banner 49 underneath areas 42 and 44. A message is displayed at the top of an area 46 to prompt the viewer to select from a number of website names displayed in area 46 by moving a cursor 48 with arrow keys on the viewer input device. For example, if the television program is a serial television show, for example, "Married With Children," the website names could be information related to the show. After a website name is selected, the viewer presses a button on the viewer input device. As a result, the website address to which the selected website name is linked is retrieved from memory 36 by microprocessor 24 and sent through the telephone or cable interface to Internet service provider 33. (If desired, this function of microprocessor 24 could be carried out by commercial equipment sold under the trademark WEB TV.) The information at the addressed website is downloaded from Internet service provider 33 over link 34 to microprocessor 24 and then displayed on the screen simultaneously with the television program to which the information relates, as illustrated in FIG. 3, after being composed by video processor 30. As illustrated in FIG. 3, the name of the website can be displayed above the text of the information from the website. If the television program is a serial television show, as previously stated, the displayed information could include information about the episode, cast biographies, and trivia related to the show. The viewer then navigates about the website in the manner dictated by the viewer's software to find the desired information.

An alternative layout of the television screen for the present invention is shown in

FIG. 4. In this layout, the television program is displayed in a majority portion 60 of the screen while the PRI is displayed along two border regions 62. The Web page including the PRI can be specifically configured to display the PRI in the border regions and an area designated for the real time image in the PIP. The PIP circuitry 19 is specially configured to a smaller reduction ratio, for example 1.5:1 rather than 3:1 for a standard PIP, in order to produce the larger PIP display.

The screen portion 60 displays a television program consisting of moving images.

Referring back to FIG. 1, when the viewer interacts with the website data or other PRI displayed on the television screen, the viewer's attention is diverted from the television program being shown to the website data. The viewer is then missing what is happening in the television program until the viewer's interaction with the PRI is concluded. To overcome this situation, an additional component, Storage Device 52, described above, is added to the system to "time-shift" the display of the television program. As the television signal is being received by Tuner 11, the signal is forwarded through IF Amp 12 and Picture DET 13 to VCR 17. The VCR sends the signal through an analog to digital converter (A/D) 50 to Storage Device 52. The Storage Device is under the control of the Microprocessor 24 and is capable of storing the incoming television signal in real-time as digital information for future use.

As the television signal is being stored, if a viewer wants to interact with the PRI such as website data or other textual information being displayed on the television screen, the viewer sends a command to the microprocessor 24 via the viewer input device 28. The viewer action to send the command could, for example, consist of pushing a button on the viewer input device. In response, the microprocessor 24 controls VCR 17 to output the television signal to the Storage Device 52 which begins storing the television signal, including the PRI information embedded in the VBI. The Storage Device 52 simultaneously outputs the first stored frame of the video signal to the signal processing unit for extended display on television 32. The television 32 continues to display this frame until controlled by

the viewer to continue without effect on any viewer activity with the PRI shown in the remainder of the display screen. The viewer then interacts with the PRI as described above.

When the viewer is done interacting with the PRI, the viewer sends a command to the microprocessor 24 to resume display of the television program. However, instead of displaying the incoming television signal from Tuner 11, the VCR directs the delivery of the stored television signal data output from the READ head of Storage Device 52 through Digital-to-Analog Converter (D/A) 54 and SW 18 to PIP 19 for display on TV 20. The data displayed is that part of the television program immediately subsequent to the point of suspension. That is, it has been time-shifted. The incoming television signal data continues to be stored by the WRITE head of the Storage Device 52 in a time-ordered manner regardless of the functioning of the READ head. In other words, when display of the television program is to be suspended, the READ head is kept in the same position until a resume command is received. The WRITE head, however, keeps moving to record the incoming television signal data. Hence, at this time the data being stored is not the same data that is being displayed; there is a time lag between the two sets of data. In this manner, the viewer may continue watching the program without losing continuity of the program or PRI content. The viewer can position a cursor and enter input to freeze the display of the television program image on command.

In another embodiment, the PRI is contained on several web pages, each corresponding to a particular portion of the program and transmitted chronologically throughout the duration of the program. The television signal including the embedded website addresses is stored on the Storage Device 52 and hence the corresponding Web pages remain linked to the appropriate portion of the television program as the signal is read out from the Storage Device 52 after a "pause" operation. In this manner, the viewer may continue watching the program without losing continuity of the program or PRI content.

The audio portion of the television signal is also stored in the Storage Device along with the video portion. When the live television program is put into a "freeze" frame state,

the audio portion of the television program is also suspended and not transmitted to the viewer. Instead, the audio portion is stored. When display of the suspended television program is resumed, the audio data is obtained from the Storage Device along with the video portion and forwarded by VCR 17 through Sound Amp 15 and loudspeaker 16 to the viewer.

In another embodiment, the television signal is already in digital form, such as for high-definition digital television (HDTV). Therefore, an analog to digital conversion is unnecessary. The Storage Device continuously stores the television signal in a wraparound fashion whenever the system is operational, overwriting the oldest previously stored television signal data when the Storage Device becomes full. The Storage Device should be large enough to hold two to three hours of television programming before overwriting earlier broadcast television signal data.

The present invention allows a viewer to interrupt his or her viewing of a television program to interact with PRI carried in the VBI of the television signal and displayed on the television screen, and yet rejoin the television program at a later point in time without missing any of the program.

In another embodiment, the display of the incoming television signal may be suspended automatically by inserting a suspend flag into the VBI, rather than by an explicit action by the viewer. When the suspend flag is detected by the microprocessor 24 after decoding by VBI decoder 35, the microprocessor instructs the VCR via a control link (not shown) to suspend the current display of the television signal. Resumption of display of the television program is commenced by viewer input. The viewer could also override the automatic suspension feature provided by the suspend flag by setting a predetermined control value to override all automatic suspend flags, or by entering viewer input when the suspension activity occurs in order to rapidly rejoin the television program in progress. Alternatively, a resume flag is inserted into the VBI at a predetermined time after the suspend flag. When the resume flag is received, the microprocessor automatically controls the VCR to resume display of the television program.

According to yet another embodiment, the viewer may access the information as any other storage media, such as a video tape, and pause, rewind, or fast forward to different portions of the program stored on the disc after the initially "pause" command. It may be desirable to continuously record the program on the time-shifting apparatus 46 regardless of a viewer "pause" command to allow for these functions over a period of time, limited only by the storage capacity of the time-shifting device.

Although the present invention has been described with respect to particular embodiments, those skilled in the art will appreciate that the present invention may be modified without departing from the scope of the invention. Accordingly, all such modifications are intended to be included within the scope of the invention as defined by the following claims.

CLAIMS:

1. Apparatus for time-shifting video and program related information (PRI) in an enhanced television program comprising:

a display screen;

a tuner for receiving a television signal with embedded data representative of an address for an Internet site including PRI;

means for extracting the embedded data from the television signal;

a memory for storing the embedded data;

input means for inputting viewer commands;

a time-shifting apparatus capable of simultaneously storing the television signal as it is received and outputting the stored television signal for display;

means for communicating with an internet service provider to retrieve information from the internet site including the PRI; and

a microcontroller comprising

means for retrieving the internet site address from memory and retrieving the PRI from the internet site in response to a first viewer command;

means for generating a composite display including a television program contained in the television signal in a first portion of the display and the PRI in a second portion of the display in response to the first viewer command,

means for controlling the time-shifting apparatus to store the television signal as it is received and display a still frame from the stored television signal in a first portion of the display screen in response to a second viewer command, and

means for controlling the time-shifting apparatus to output the portion of the stored television signal subsequent to the still frame for display in the first portion of the display in response to a third viewer command.

2. The apparatus of claim 1 wherein the time-shifting apparatus is an optical disc.

3. The apparatus of claim 1 wherein the time-shifting apparatus is a solid state memory.

4. The apparatus of claim 1 wherein the PRI comprises text and graphics related to the television program.

5. The apparatus of claim 4 wherein the PRI comprises a plurality of website addresses.

6. The apparatus of claim 5 wherein the microcontroller comprises means for retrieving information from one of said plurality of website addresses in response to a fourth viewer command.

7. The apparatus of claim 1 wherein the first portion of the display covers a minor portion of the display screen and the second portion of the display covers a major portion of the display screen.

8. The apparatus of claim 1 wherein the first portion of the display covers a major portion of the display screen and the second portion of the display covers a minor portion of the display screen.

9. The apparatus of claim 1 wherein the means for communicating with the internet service provider is a modem.

10. A method for time-shifting video and program related information (PRI) in an enhanced television program comprising the steps of:

receiving a television signal with embedded data representative of an address for an internet side including PRI;

extracting the embedded data from the television signal;

storing the embedded data in a memory;

selecting an internet mode in response to a first viewer command;

communicating with an internet service provider to retrieve information from the internet site including the PRI;

displaying a television program contained in the television signal in a first portion of a display screen and the PRI in a second portion of the display screen;

storing the television signal in a time-shifting apparatus and continuously displaying a still frame from the stored television signal in response to a second viewer command; and

simultaneously displaying the television program subsequent to the still frame from the stored television signal and continuing to store the television signal as it is received in response to a third viewer command.

11. The method of claim 10 wherein the PRI comprises a plurality of website addresses and further comprising the steps of:

selecting one of the plurality of website addresses in the PRI;

retrieving information from the selected website address; and

displaying the information from the selected website address.

12. A method for time-shifting video and program related information (PRI) in an enhanced television program comprising the steps of:

receiving a television signal with embedded data representative of an address for an internet side including PRI and a suspend flag;

extracting the embedded data from the television signal;

storing the embedded data in a memory;

selecting an internet mode in response to a first viewer command;

communicating with an internet service provider to retrieve information from the internet site including the PRI;

displaying a television program contained in the television signal in a first portion of a display screen and the PRI in a second portion of the display screen;

detecting the suspend flag;

storing the television signal in a time-shifting apparatus and continuously displaying a still frame from the stored television signal; and

simultaneously displaying the television program subsequent to the still frame from the stored television signal and continuing to store the television signal as it is received in response to a second viewer command.

13. The method of claim 12 wherein the step of storing ten television signal in the time-shifting apparatus is performed in response to detecting the suspend flag.

14. The method of claim 12 wherein the step of storing the television signal in the time-shifting apparatus is performed in response to a third viewer command.

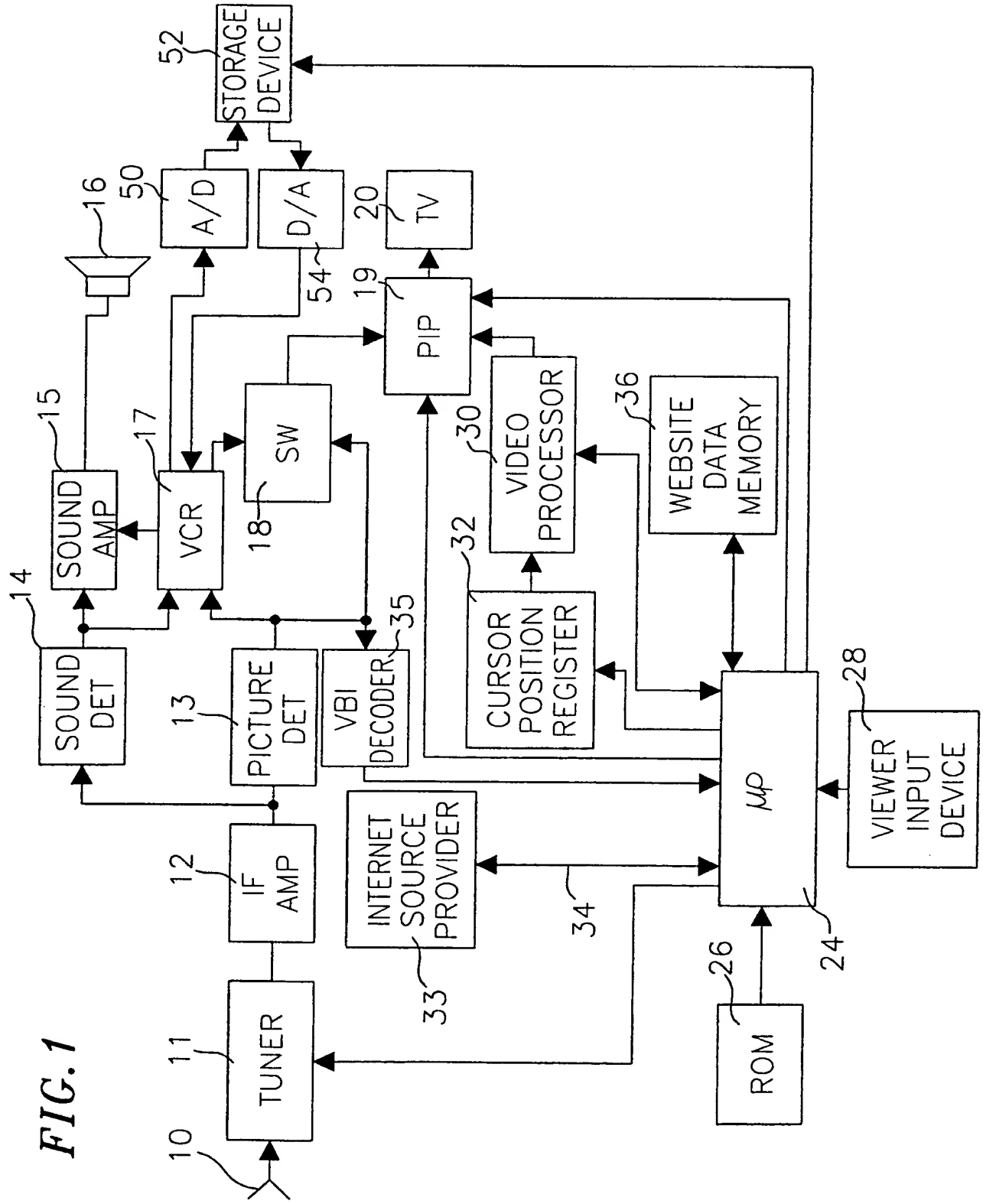

STORAGE DEVICE
52
A/D
50
D/A
54
TV
20
16
PIP
19
SOUND AMP
15
VCR
17
SW
18
VIDEO PROCESSOR
30
WEBSITE DATA MEMORY
36
14
SOUND DET
13
PICTURE DET
VBI DECODER
35
32
CURSOR POSITION REGISTER
28
VIEWER INPUT DEVICE
12
IF AMP
INTERNET SOURCE PROVIDER
33
34
µP
26
ROM
24
11
TUNER
10

FIG. 1

FIG. 2

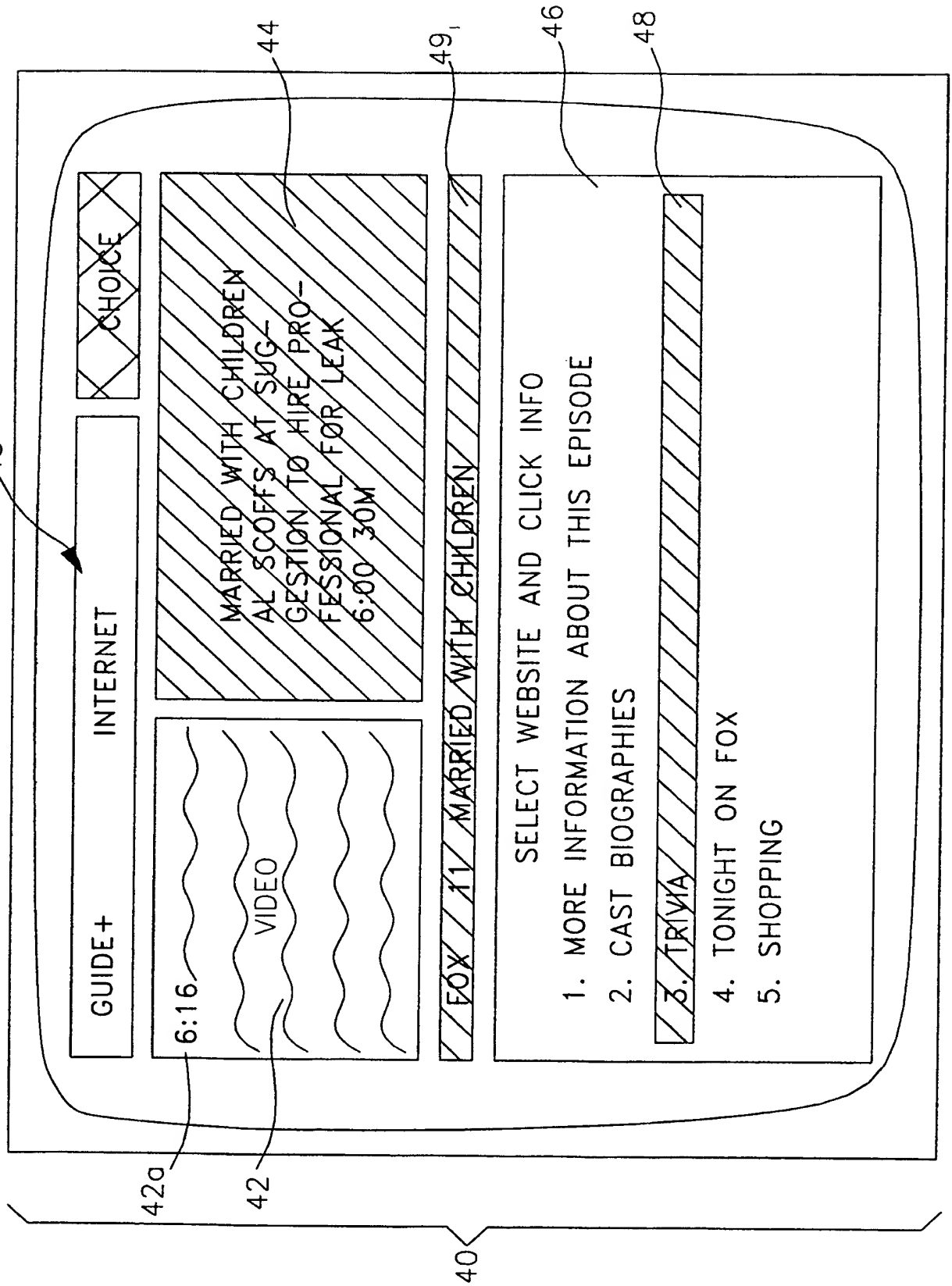

43
44
49
46
48
CHOICE
INTERNET
GUIDE+
6:16
VIDEO
MARRIED WITH CHILDREN
AL SCOFFS AT SUG-
GESTION TO HIRE PRO-
FESSIONAL FOR LEAK
6:00 30M
FOX 11 MARRIED WITH CHILDREN
SELECT WEBSITE AND CLICK INFO
1. MORE INFORMATION ABOUT THIS EPISODE
2. CAST BIOGRAPHIES
3. TRIVIA
4. TONIGHT ON FOX
5. SHOPPING
42a
42
40

FIG. 3

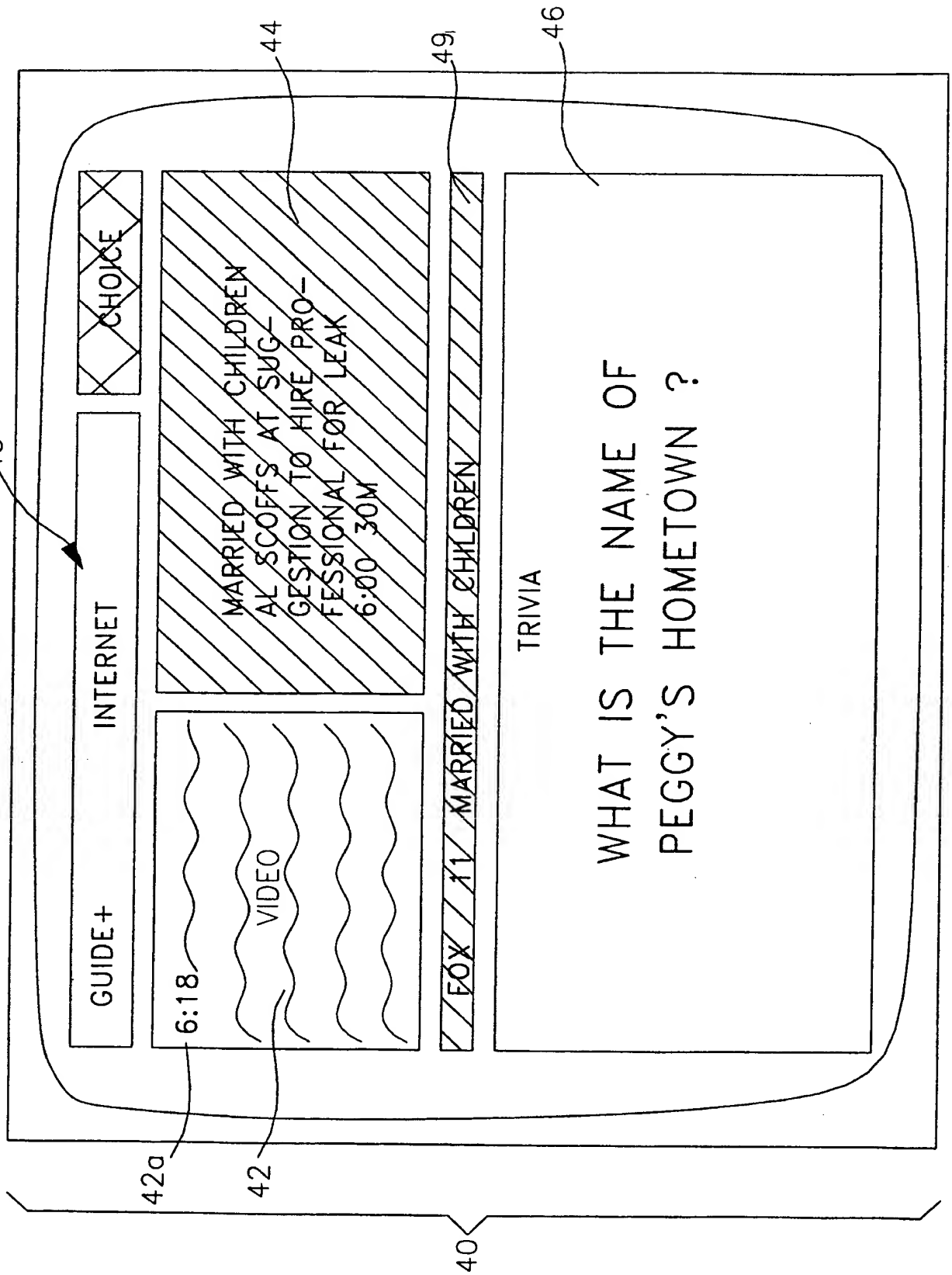
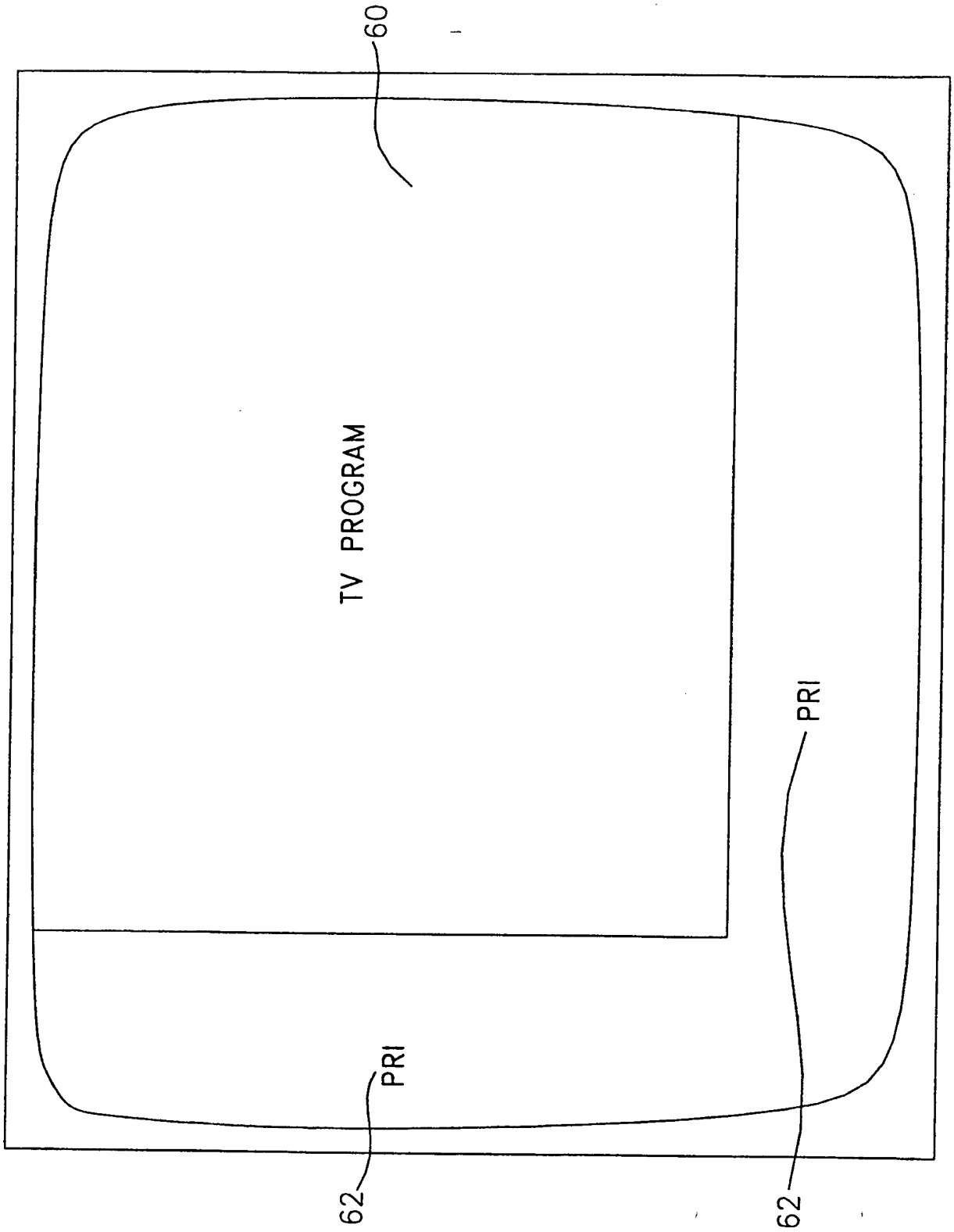

43
44
49
46
CHOICE
INTERNET
GUIDE+
6:18
VIDEO
MARRIED WITH CHILDREN
AL SCOFFS AT SUG-
GESTION TO HIRE PRO-
FESSIONAL FOR LEAK
6:00 30M
FOX 11 MARRIED WITH CHILDREN
TRIVIA
WHAT IS THE NAME OF
PEGGY'S HOMETOWN ?
42a
42
40

FIG. 4



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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04N 7/173 — A3

(11) International Publication Number: WO 98/48566

(43) International Publication Date: 29 October 1998 (29.10.98)

(21) International Application Number: PCT/US98/08305

(22) International Filing Date: 20 April 1998 (20.04.98)

(30) Priority Data:

| | | |
|---|---|---|
| 60/044,161 | 21 April 1997 (21.04.97) | US |
| 60/052,248 | 11 July 1997 (11.07.97) | US |

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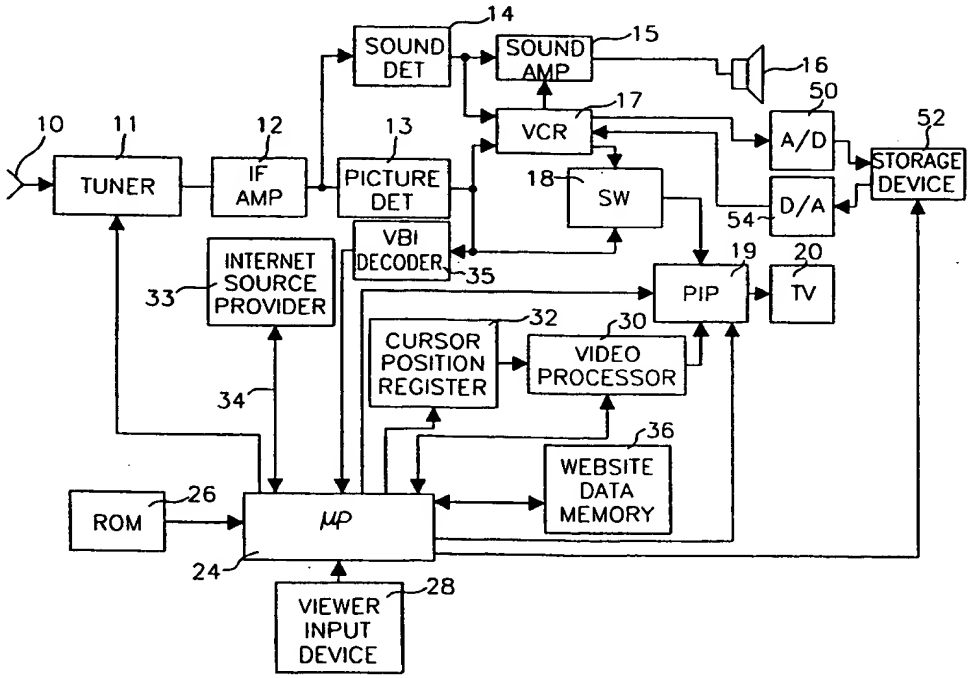
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

**Published**
*With international search report.*

(88) Date of publication of the international search report: 21 January 1999 (21.01.99)

(54) Title: TV VBI ENCODED URL WITH VIDEO STORAGE




(57) Abstract

A television system allows a viewer of a text-enhanced television program to pause (via 28) the program at a particular frame, browse the enhancements at his or her leisure, and then resume viewing the program from that frame, without losing continuity of the video and enhancement portions of the program content. This is accomplished by time-shifting (52) the television program for later playback.

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# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/08305

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) :H04N 7/173
US CL :345/327
According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 345/327; 348/906,7,10,11,12,13, 552, 478,473, 553,559,560,563-568; 455/4.2, 5.1, 6.1, 6.2,6.3; H04N 7/16, 7/173

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

TV OR TELEVISION, VIDEO, VBI, BLANKING, URL, WEB, INTERNET

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A, E | US 5,774,666 A (PORTUESI) 30 JUNE 1998<br>whole document | 1-14 |
| A, P | US 5,694,163 A (HARRISON) 02 December 1997<br>whole document | 1-14 |
| A, E | US 5,774,664 A (HIDARY et al.) 30 June 1998<br>whole document | 1-14 |

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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|---|---|---|---|
| * | Special categories of cited documents: | "T" | later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
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| "P" | document published prior to the international filing date but later than the priority date claimed | | |

| | |
|---|---|
| Date of the actual completion of the international search<br>25 AUGUST 1998 | Date of mailing of the international search report<br>13 OCT 1998 |
| Name and mailing address of the ISA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, D.C. 20231<br>Facsimile No. (703) 305-3230 | Authorized officer<br>CHRISTOPHER GRANT<br>Telephone No. (703) 305-3900 |

Form PCT/ISA/210 (second sheet)(July 1992)★

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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04N 7/173

A1

(11) International Publication Number: **WO 99/01984**

(43) International Publication Date: 14 January 1999 (14.01.99)

(21) International Application Number: PCT/IL98/00307

(22) International Filing Date: 30 June 1998 (30.06.98)

(30) Priority Data:
121230 3 July 1997 (03.07.97) IL

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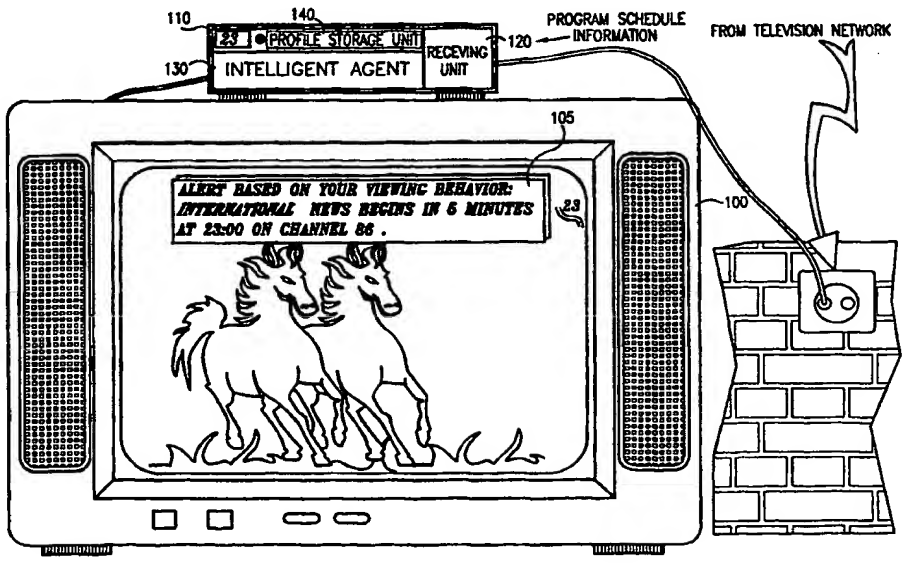
(74) Agents: COLB, Sanford, T. et al.; Sanford T. Colb & Co., P.O. Box 2273, 76122 Rehovot (IL).

(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

**Published**
*With international search report.*

(54) Title: INTELLIGENT ELECTRONIC PROGRAM GUIDE




(57) Abstract

A subscriber unit (110) for use in a television system including a television network and transmitting apparatus for transmitting program schedule information, the subscriber unit including a receiving unit (120) for receiving the program schedule information, a profile storage unit (140) for storing at least one viewer preference profile of at least one television viewer, an intelligent agent (130) for customizing the program schedule information based, at least in part, on the viewer preference profile, to produce a program guide including customized program schedule information, and display apparatus (100) for displaying the program guide.

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# INTELLIGENT ELECTRONIC PROGRAM GUIDE

## FIELD OF THE INVENTION

The present invention relates to television systems in general, and in particular to electronic program guides for television systems.

## BACKGROUND OF THE INVENTION

Electronic program guides are well-known in the art. Electronic program guides provide television program schedule information on the television screen. Typically, electronic program guides display a rectangular grid schedule on the television screen, and allow the viewer to navigate through the schedule and to perform a variety of functions for one or more programs appearing on the schedule. Typical prior art program guides and related technologies are described in the following patents and published applications:

US Patent 4,706,121 to Young and Reexamination Certificate B1 4,706,121 to Young;

US Patent 4,977,455 to Young;

US Patent 5,038,211 to Hallenbeck;

US Patent 5,151,789 to Young;

US Patent 5,323,240 to Amano et al.;

US Patent 5,353,121 to Young et al.;

US Patent 5,444,499 to Saitoh

US Patent 5,479,266 to Young et al.;

US Patent 5,479,268 to Young et al.;

US Patent 5,515,106 to Chaney et al.;

US Patent 5,524,195 to Clanton, III et al.;

US Patent 5,550,576 to Klosterman;

US Patent 5,564,088 to Saitoh;

PCT published application WO 90/00847, assigned to Insight Telecast, Inc.;

PCT published application WO 91/07050, assigned to Insight Telecast, Inc.;

PCT published application 92/04801, assigned to Insight Telecast, Inc.; and

PCT published application WO 95/31069, assigned to Starsight Telecast, Inc.

Customization of program guide information based on information explicitly entered by a viewer is known in the art and is described, for example, in US patents 5,479,266 and 5,479,268, mentioned above. Customization of program guide information based on the channel watched and time watched is described in the following US patents: 5,323,240; 5,444,499; and 5,564,088.

Broadcast methods of interest in the field of the present invention are described in DVB standard ETS 300-468.

The terms "agent" and "intelligent agent" are used interchangeably throughout the present specification and claims to refer to any machine-based assistant, including but not limited to a machine-based assistant implemented in software, with authority delegated from the user or users of the agent. Specifically, the terms "agent" and "intelligent agent", as used herein, are not limited to agents used by a particular person and may include agents used by one person or a plurality of people, whether used in a domestic, commercial, or other context.

Intelligent agents are both in use and proposed for future use in computer systems, particularly computer systems connected to an internetwork such as the Internet. Publications describing the intelligent agent prior art and proposals for the future use of intelligent agents include the following:

1. Fah-Chun Cheong, Internet Agents: Spiders, Wanderers, Brokers, and 'Bots, published by New Riders Publishing, 1996, describes the state of the art in agents in general and in Internet agents in particular. Chapter 1, pages 3 - 35 and the bibliography thereto on pages 387 - 390 are particularly relevant to the agent prior art. On page 9, Cheong describes surrogate bots, which are agents to "relieve users of low-level administrative and clerical tasks, such as setting up meetings, sending out papers, locating information, tracking whereabouts of people, and so on." Cheong gives the

example of a visitor scheduling bot whose purpose is to assist in scheduling the visitors of the user of the bot.

On page 19, Cheong describes learning agents, a type of personal agent envisioned in the future for which "learning about the particular user's habits and goals, and tailoring to them accordingly" is the essential principle of operation. As an example of a learning agent, Cheong gives a calendar apprentice which helps a user organize the user's meeting schedule.

2. A World Wide Web Document found on the Internet at www.raleigh.ibm.com/iag/iaghome.html describes intelligent agents in general and IBM intelligent agents in particular. A copy of the document was obtained from the Internet on September 24, 1996 at 2:14 PM.

3. A World Wide Web Document found on the Internet at www.raleigh.ibm.com/iag/iagptc2.html, entitled "The Role of Intelligent Agents in the Information Infrastructure", describes various application areas that intelligent agents can enhance. In section 3.8, Adaptive User Interfaces, mention is made that "agent technology allows systems to monitor the user's actions, develop models of user abilities, and automatically help out when problems arise." The document neither describes nor suggests the use of intelligent agents to customize an electronic program guide or any similar system component. A copy of the document was obtained from the Internet on September 24, 1996 at 2:16 PM.

The above-mentioned prior art does not appear to describe or suggest the use of intelligent agents in any of the following contexts: in television systems; with a program guide in any context; or with an entity similar to a program guide in a computer system.

The disclosures of all references mentioned above and throughout the present specification are hereby incorporated herein by reference.

## SUMMARY OF THE INVENTION

The present invention seeks to provide an improved electronic program guide for use in a television system. Throughout the present specification and claims, the term "television system" is used in a broad sense to include all types of television

systems, including but not limited to any one or combination of the following: one-way systems; two-way systems; systems utilizing cable communication networks, satellite communication networks, telephone communication networks, other communication networks, or any combination thereof; and CATV systems. Particularly, both pay television systems and non-pay or free television systems are included in the term "television system".

The present invention provides for customization of an electronic program guide by an intelligent agent. Typically, the intelligent agent monitors viewing behavior of one viewer or a plurality of viewers and creates a preference profile based on the monitored viewing behavior. The intelligent agent then preferably employs the preference profile to customize the electronic program guide based on the preference profile.

There is thus provided in accordance with a preferred embodiment of the present invention a television system including a television network, and transmitting apparatus for transmitting program schedule information to a multiplicity of subscriber units, at least one of the multiplicity of subscriber units including a receiving unit for receiving the program schedule information from the television network, a profile storage unit for storing at least one viewer preference profile of at least one television viewer, an intelligent agent for customizing the program schedule information based, at least in part, on the viewer preference profile, to produce a program guide including customized program schedule information, and display apparatus for displaying the program guide.

There is also provided in accordance with another preferred embodiment of the present invention a subscriber unit for use in a television system including a television network and transmitting apparatus for transmitting program schedule information, the subscriber unit including a receiving unit for receiving the program schedule information, a profile storage unit for storing at least one viewer preference profile of at least one television viewer, an intelligent agent for customizing the program schedule information based, at least in part, on the viewer preference profile, to produce a program guide including customized program schedule information, and display apparatus for displaying the program guide.

There is also provided in accordance with another preferred embodiment

transmitting apparatus for transmitting program schedule information to a multiplicity of subscriber units, the transmitting apparatus including a headend, the headend including a profile storage unit for storing at least one viewer preference profile of at least one television viewer associated with one of the multiplicity of subscriber units, and an intelligent agent for customizing the program schedule information based, at least in part, on the viewer preference profile, to produce customized program schedule information, wherein the transmitting apparatus is operative to transmit the customized program schedule information to the one of the multiplicity of subscriber units, and at least one of the multiplicity of subscriber units includes a receiving unit for receiving the customized program schedule information from the television network, and display apparatus for displaying a program guide including the customized program schedule information.

There is also provided in accordance with another preferred embodiment of the present invention a headend for use in a television system including a television network and transmitting apparatus for transmitting customized program schedule information to at least one subscriber unit, the headend including a profile storage unit for storing at least one viewer preference profile of at least one television viewer associated with the at least one subscriber unit, and an intelligent agent for customizing the program schedule information based, at least in part, on the viewer preference profile, to produce customized program schedule information.

Further in accordance with a preferred embodiment of the present invention the transmitting apparatus includes network transmitting apparatus for transmitting over the television network.

Still further in accordance with a preferred embodiment of the present invention the transmitting apparatus includes recording apparatus for recording information on a removable medium, and means for sending the removable medium to a subscriber location including the subscriber unit, and the subscriber unit includes loading apparatus for loading the information from the removable medium into the subscriber unit.

Additionally in accordance with a preferred embodiment of the present invention the intelligent agent also includes profile determination apparatus for determining viewer preference profile information for at least one television viewer and for providing the viewer preference profile information to the profile storage unit for storage as a viewer preference profile, and the profile determination apparatus determines the viewer preference profile information by monitoring television viewing behavior of the at least one television viewer.

Moreover in accordance with a preferred embodiment of the present invention the television viewing behavior includes viewing at least a portion of at least one viewed television program.

Further in accordance with a preferred embodiment of the present invention the television viewing behavior includes the television viewer viewing only a portion of at least one viewed television program.

Still further in accordance with a preferred embodiment of the present invention the profile determination apparatus compares a length of the portion of the at least one viewed television program to a predetermined viewing threshold length to determine whether the length is greater than the threshold length, and the profile determination apparatus determines the viewer preference profile information based, at least in part, on whether the length is greater than the threshold length.

Additionally in accordance with a preferred embodiment of the present invention when the length is determined to be less than the threshold length, the profile determination apparatus determines the viewer preference profile information without regard to the viewing only a portion of the at least one television program.

Moreover in accordance with a preferred embodiment of the present invention when the portion is determined to be less than the threshold, the profile determination apparatus determines that the viewer is engaged in channel surfing behavior, and the profile determination apparatus determines the viewer preference profile information based, at least in part, on the channel surfing behavior.

Further in accordance with a preferred embodiment of the present invention the program schedule information includes a first plurality of criteria, at least one of the first plurality of criteria being associated with each of a second plurality of

television programs, and the profile determination apparatus determines the viewer preference profile information based, at least in part, on at least one of the plurality of criteria associated with the at least one viewed television program.

Still further in accordance with a preferred embodiment of the present invention the profile determination apparatus determines the viewer preference profile information, at least in part, in accordance with input provided by the at least one television viewer.

Additionally in accordance with a preferred embodiment of the present invention the profile determination apparatus determines viewer preference profile information from a reaction of the at least one television viewer to previously displayed customized program schedule information.

Moreover in accordance with a preferred embodiment of the present invention each the viewer preference profile includes a viewer preference profile of exactly one viewer.

Further in accordance with a preferred embodiment of the present invention at least one the viewer preference profile includes a viewer preference profile of a plurality of viewers.

Still further in accordance with a preferred embodiment of the present invention the apparatus also includes viewer preference profile loading apparatus for providing a recorded viewer preference profile to the profile storage unit for storage.

Additionally in accordance with a preferred embodiment of the present invention the viewer preference profile loading apparatus receives the recorded viewer preference profile via the television network.

Moreover in accordance with a preferred embodiment of the present invention the viewer preference profile loading apparatus receives the viewer preference profile from profile storage apparatus located remotely thereto.

Further in accordance with a preferred embodiment of the present invention the customizing includes emphasizing at least a portion of the customized program schedule information based, at least in part, on the viewer preference profile.

Still further in accordance with a preferred embodiment of the present invention the customizing includes deemphasizing at least a portion of the customized program schedule information based, at least in part, on the viewer preference profile.

Additionally in accordance with a preferred embodiment of the present invention the customizing includes tailoring a custom channel based, at least in part, on the viewer preference profile.

Moreover in accordance with a preferred embodiment of the present invention the customizing includes automatically tuning to a program selected based, at least in part, on the viewer preference profile.

Further in accordance with a preferred embodiment of the present invention the customizing includes automatically recording, on recording apparatus, a program selected based, at least in part, on the viewer preference profile.

Still further in accordance with a preferred embodiment of the present invention the customizing includes ordering at least some of the customized program schedule information based, at least in part, on the viewer preference profile.

Additionally in accordance with a preferred embodiment of the present invention the display apparatus is operative to display an on-screen alert including at least part of the customized program schedule information.

Moreover in accordance with a preferred embodiment of the present invention the alert includes an unsolicited alert.

Further in accordance with a preferred embodiment of the present invention the unsolicited alert includes audience viewing information including an indication of a proportion of an audience currently viewing a program.

Still further in accordance with a preferred embodiment of the present invention the program includes a program currently being viewed by a viewer.

Additionally in accordance with a preferred embodiment of the present invention the program includes a program not currently being viewed by a viewer.

Further in accordance with a preferred embodiment of the present invention the display apparatus displays the on-screen alert a predetermined period of time before a scheduled starting time of a television program, the at least part of the

customized program schedule information including information associated with the television program.

Still further in accordance with a preferred embodiment of the present invention the customizing includes displaying an indication of a proportion of an audience currently viewing a program.

Additionally in accordance with a preferred embodiment of the present invention the proportion of an audience includes a proportion of an audience viewing a program currently being viewed by a viewer.

Further in accordance with a preferred embodiment of the present invention the proportion of an audience includes a proportion of an audience viewing a program not currently being viewed by a viewer.

Still further in accordance with a preferred embodiment of the present invention the display apparatus includes an icon-based guide generator for producing an icon-based hierarchical program guide including the program schedule information, and the program guide includes the icon-based hierarchical program guide. The term "icon", as used throughout the present specification and claims, is used in the sense commonly accepted in the art of computer programming, particularly computer interface design, to refer to a small picture, photograph, or other representation which is meant to pictorially recall to the user a function or functions associated therewith.

There is also provided in accordance with another preferred embodiment of the present invention a television system including a television network, and transmitting apparatus for transmitting program schedule information to a multiplicity of subscriber units, each subscriber unit including a receiving unit for receiving the program schedule information from the television network, an icon-based guide generator for producing a program guide including an icon-based hierarchical program guide including the program schedule information, and display apparatus for displaying the program guide.

There is also provided in accordance with another preferred embodiment of the present invention a subscriber unit for use in a television system including a television network and transmitting apparatus for transmitting program schedule information, the subscriber unit including a receiving unit for receiving the program

schedule information from the television network, an icon-based guide generator for producing a program guide including an icon-based hierarchical program guide including the program schedule information, and display apparatus for displaying the program guide.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing a program guide in a television system, the method including providing a television network, and transmitting program schedule information to a multiplicity of subscriber units, each subscriber unit performing the following steps receiving the program schedule information from the television network, storing at least one viewer preference profile of at least one television viewer, employing an intelligent agent to customize the program schedule information based, at least in part, on the viewer preference profile, to produce a program guide including customized program schedule information, and displaying the program guide.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing a program guide in a television system including a television network and transmitting apparatus for transmitting program schedule information, the method including receiving the program schedule information, storing at least one viewer preference profile of at least one television viewer, employing an intelligent agent to customize the program schedule information based, at least in part, on the viewer preference profile, to produce a program guide including customized program schedule information, and displaying the program guide.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing a program guide in a television system, the method including providing a television network, and transmitting program schedule information to a multiplicity of subscriber units, wherein the step of transmitting includes storing at least one viewer preference profile of at least one television viewer associated with one of the multiplicity of subscriber units, employing an intelligent agent to customize the program schedule information based, at least in part, on the viewer preference profile, to produce customized program schedule information, transmitting the customized program schedule information to the one of the multiplicity of subscriber units, receiving, at the one of the multiplicity of subscriber units, the customized program

schedule information from the television network, and displaying a program guide including the customized program schedule information.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing a program guide in a television system including a television network and transmitting apparatus for transmitting customized program schedule information, the method including storing at least one viewer preference profile of at least one television viewer associated with one of the multiplicity of subscriber units, and customizing the program schedule information based, at least in part, on the viewer preference profile, to produce customized program schedule information.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing a program guide in a television system, the method including providing a television network, and transmitting program schedule information to a multiplicity of subscriber units, each subscriber unit performing the following steps receiving the program schedule information, producing a program guide including an icon-based hierarchical program guide including the program schedule information, and displaying the program guide.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing a program guide in a television system including a television network and transmitting apparatus for transmitting program schedule information, the method including receiving the program schedule information, producing a program guide including an icon-based hierarchical program guide including the program schedule information, and displaying the program guide.

There is also provided in accordance with another preferred embodiment of the present invention a headend for use in a television system including a television network and transmitting apparatus for transmitting customized program schedule information to a multiplicity of subscriber units, the transmitting apparatus including the headend, the headend including a profile creation unit for creating at least one viewer preference profile of at least one television viewer associated with one of the multiplicity of subscriber units, based on viewer information associated with the one of the

multiplicity of subscriber units, and a transmission unit for transmitting the at least one viewer preference profile to the one of the multiplicity of subscriber units.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing a program guide in a television system including a television network and transmitting apparatus for transmitting customized program schedule information to a multiplicity of subscriber units, the method including creating at least one viewer preference profile of at least one television viewer associated with one of the multiplicity of subscriber units, based on viewer information associated with the one of the multiplicity of subscriber units, and transmitting the at least one viewer preference profile to the one of the multiplicity of subscriber units.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing a viewer preference profile in a television system including a plurality of subscriber units, the method including recording, at a first subscriber unit, a viewer preference profile on a removable medium, loading, at a second subscriber unit, the viewer preference profile from the recording medium, and customizing a program guide, at the second subscriber unit, based, at least in part, on the viewer preference profile.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing audience information to a viewer of a television system, the method including collecting viewing data from a multiplicity of viewers of a television system, computing audience information from the collected viewing data, and transmitting the computed audience information to a viewer of the television system.

Further in accordance with a preferred embodiment of the present invention the method also includes displaying the computed audience information to the viewer of the television system.

Still further in accordance with a preferred embodiment of the present invention the computed audience information comprises real-time computed audience information.

There is also provided in accordance with another preferred embodiment of the present invention a method for providing a program guide in a television system

comprising a television network and transmitting apparatus for transmitting information to a multiplicity of subscriber units, the method including creating at least one viewer preference profile of at least one television viewer associated with one of the multiplicity of subscriber units, based on viewer information associated with the one of the multiplicity of subscriber units, creating a customized program guide based, at least in part, on the at least one viewer preference profile, and transmitting the customized program guide to the one of the multiplicity of subscriber units.

Further in accordance with a preferred embodiment of the present invention the transmitting step includes transmitting via at least one of the following: conventional mail, electronic mail, provision of a World Wide Web site comprising said customized program guide, and wireless transmission to a portable electronic receiving device.

Still further in accordance with a preferred embodiment of the present invention the icon-based hierarchical program guide includes a plurality of icons, and at least one of the plurality of icons is associated with additional information, the additional information being provided to a user upon request.

Additionally in accordance with a preferred embodiment of the present invention the additional information includes at least one of the following: audio material; visual material; audio-visual material; multimedia material; a computer program; and at least one preview of at least one program.

Moreover in accordance with a preferred embodiment of the present invention the additional information includes a plurality of customized items of information, and at least one of the plurality of customized items of information is provided to the user based, at least in part, on at least one of the following: a user preference; a conditional access parameter; and a region in which said user is located.

## BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated more fully from the following detailed description, taken in conjunction with the drawings in which:

Fig. 1 is a simplified partly pictorial, partly block diagram illustration of a television system comprising a subscriber unit constructed and operative in accordance with a preferred embodiment of the present invention;

Fig. 2 is a simplified block diagram illustration of a portion of the apparatus of Fig. 1;

Fig. 3 is a simplified block diagram illustration of a preferred implementation of the intelligent agent of Fig. 2;

Fig. 4 is a simplified flowchart illustration of a preferred method of operation of the viewing information analysis apparatus of Fig. 3;

Fig. 5 is a simplified flowchart illustration of a preferred implementation of step 260 of Fig. 4;

Fig. 6 is a simplified flowchart illustration of a preferred method of determining whether a viewer is engaged in surfing behavior in step 280 of Fig. 5;

Fig. 7 is a simplified flowchart illustration of a preferred method of operation of the program schedule customization apparatus of Fig. 3;

Fig. 8A is a simplified partly pictorial, partly block diagram illustration of a television system comprising a subscriber unit constructed and operative in accordance with an alternative preferred embodiment of the present invention;

Fig. 8B is a simplified partly pictorial, partly block diagram illustration of a television system comprising a subscriber unit constructed and operative in accordance with another alternative preferred embodiment of the present invention; and

Figs. 9A - 9L are simplified pictorial representations of preferred embodiments of an electronic program guide, which may be displayed on the display of Fig. 1, Fig. 8A, or Fig. 8B.

## DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Reference is now made to Fig. 1 which is a simplified partly pictorial, partly block diagram illustration of a television system comprising a subscriber unit constructed and operative in accordance with a preferred embodiment of the present invention. The apparatus of Fig. 1 comprises display apparatus 100 for display of an electronic program guide, the display apparatus 100 typically comprising a television set

as shown in Fig. 1. The television set may comprise any suitable commercially available television set.

It is appreciated that the display apparatus 100 may alternatively comprise any other suitable display apparatus such as, for example, a computer display, another suitable display, or suitable projection equipment, as is well known in the art. In a case where a display other than a television set is used, it is appreciated that a television set is typically provided separately. For the purpose of simplicity in description, a case where the display apparatus 100 comprises a television set is generally described throughout the present specification, but it is appreciated that another type of appropriate display apparatus may generally be used.

On the display apparatus 100 an on-screen alert 105 is shown. The on-screen alert 105 is described more fully below. The on-screen alert 105 is shown as an example of a component of an electronic program guide, as described below. It is appreciated that the electronic program guide may take a wide variety of forms and that, typically, the on-screen alert 105 is comprised in the electronic program guide and that the electronic program guide may comprise other components alternatively, or in addition to, the on-screen alert 105.

The apparatus of Fig. 1 also comprises an interface unit 110. The interface unit 110 is also known as a set top box (STB). The interface unit 110 is operative to provide a least a one-way interface, and optionally a two-way interface, between the display apparatus 100 and a television network, which may be either a pay television network or a non-pay or free television network. It is appreciated that, in certain preferred embodiments of the present invention such as, for example, the embodiments of Figs. 8A and 8B, described below, a two-way interface is preferable. The interface unit 110 typically comprises a variety of conventional STB components (not shown), as is well known in the art, to receive, tune and, as necessary, decode television broadcasts received from the television network and to send display signals representing the received broadcasts to the display apparatus 100.

The interface unit 110 also typically comprises a receiving unit 120, an intelligent agent 130, and a profile storage unit 140, the receiving unit 120 and the profile storage unit 140 being operatively attached to the intelligent agent 130. The receiving

unit 120, the intelligent agent 130, and the profile storage unit 140 are typically implemented in software in one or more suitable microprocessors suitably equipped with memory, but it is appreciated that a hardware implementation may also be used. The functions of the receiving unit 120, the intelligent agent 130, and the profile storage unit 140 are described in more detail below. The apparatus of Fig. 1 may also comprise a recording device such as a VCR (not shown), or any other appropriate conventional recording device, including a DVCR (digital VCR) or DVD (digital video disc) recording device.

The operation of the apparatus of Fig. 1 is now briefly described. The interface unit 110 receives television broadcasts from the television network. A user of the apparatus of Fig. 1 chooses a channel to watch, using means well-known in the art such as, for example, a commercially-available remote control unit. The interface unit 110, responsive to the user's choice of channel, transmits display signals representing received broadcasts on the chosen channel to the display apparatus 100, as is well-known in the art.

As is well-known in the art, the television broadcasts typically also comprise television program schedule information. It is appreciated that program schedule information may alternatively or additionally be distributed by other non-broadcast methods such as, for example: by sending a removable medium to the user for insertion in an appropriate unit (not shown) for receiving the medium in the apparatus of Fig. 1; by publishing coded information, such as in a newspaper or magazine, and by providing equipment (not shown) for use with the apparatus of Fig. 1 to read the coded information into the apparatus of Fig. 1; or otherwise.

The terms "program schedule information" and "television program schedule information" are used interchangeably throughout the present specification and claims to refer to information describing a television program schedule. Program schedule information is typically intended to assist a television viewer in choosing a television program to watch, either at the current time or in the future. Program schedule information typically comprises one or more of the following:

channel number;

starting date;

starting time;

ending date;

ending time;

name of program;

description of program;

name of at least one actor in program;

name of director of program;

program provider;

price of program; and

classification criteria.

The classification criteria may typically comprise one or more of the following: indications of whether the program is a comedy, a drama, a documentary, a news program, etc.; an indication of whether the program contains material unsuited for younger viewers; the country of origin of the program; and any other appropriate classification criteria. A typical example of such criteria is described in DVB standard ETS 300-468, referred to above.

Reference is now additionally made to Fig. 2, which is a simplified block diagram illustration of a portion of the apparatus of Fig. 1. The apparatus of Fig. 2 comprises the receiving unit 120, the intelligent agent 130, the profile storage unit 140, and the display apparatus 150 of Fig. 2, and illustrates the connections therebetween as well as the inputs thereto and outputs therefrom. The apparatus of Fig. 2 also comprises an optional viewer preference profile loading apparatus 160 (not shown in Fig. 1), described below.

The receiving unit 120 is typically operative to receive the program schedule information from the television network and to pass the program schedule information to the intelligent agent 130. The receiving unit 120 may also be operative, as is well known in the art, to filter the program schedule information from other information broadcast via the television network, such as television programs, thus producing the information passed by the receiving unit 120 to the intelligent agent 130. The intelligent agent 130 also typically receives television viewing information representing current television viewing behavior of one or more individual viewers. The

television viewing information, typically comprising an indication of the channel currently being watched and, optionally, viewer identification information, may be received from conventional components of the interface unit 110, as is well known in the art, or from another appropriate source.

It is appreciated that, in a case where the television viewing information comprises viewer identification information, the viewer identification information is typically obtained using methods well-known in the art for identifying viewers such as, for example, requiring one or more viewers to supply identifying information such as, for example, a personal identification number (PIN) before viewing television. Thus, the television viewing information may be associated with one or more viewers. It is also appreciated that, in a case where the television viewing information does not comprise viewer identification information the television viewing information is preferably taken to be general, that is, not to be associated with any particular viewer. For the sake of simplicity in description, a case where the television viewing information is associated with one or more viewers is generally described herein, but it is appreciated that the present invention also applies to the case where the television viewing information is not associated with any particular viewer.

The intelligent agent 130 is preferably operable to combine the television viewing information with the program schedule information and to extract therefrom characteristics, typically comprising components similar to those described above with respect to program schedule information, which characterize the television program currently being viewed by the viewer. Such components are also known herein as current program characteristics. The intelligent agent 130 is typically operative to store the current program characteristics in a viewer preference profile, typically in the profile storage unit 140, the viewer preference profile typically comprising information, obtained over a period of time, on the various current program characteristics of programs viewed by a viewer at various times. The period of time may be as short as a few minutes or as long as a year or more. The viewer preference profile also typically comprises information on the amount of time or proportion of duration of the program during which each program was viewed by the viewer.

Typically, the viewer preference profile may contain information on preference strength, that is, on how strongly a certain program or type of program is preferred by the viewer. Preference strength may reflect the number of times that the program was viewed in a given period of time, the percentage of all occurrences of the program that were viewed, or any other appropriate criterion. Typically, the viewer preference profile is accumulated over an unlimited amount of time. Alternatively, old information may be eliminated from the profile or the profile may be reset upon receipt of a signal from the television network.

Optionally, the apparatus of Fig. 1 may be operative to display a viewer preference profile on the display apparatus 100 or otherwise and to allow the viewer to edit or otherwise modify the viewer preference profile, typically using user interface methods well known in the art. In this case, the viewer is preferably enabled to add, delete, or modify any information in the viewer's viewer preference profile, it being appreciated that the apparatus of Fig. 1 is preferably operative to provide an appropriate questionnaire or other assisted data input method, as is well known in the art, in order to assist the viewer in adding, deleting, or modifying information. Particularly, the viewer is preferably enabled to provide information on programs or types of programs which the viewer prefers to view or prefers not to view. Furthermore, the viewer is preferably enabled to do one or more of the following:

turn off or on the collection of viewer preference profile information;

define different levels of highlighting, as described below;

turn the delivery of alerts on or off;

instruct the apparatus of Fig. 1 to include or not to include popular programs in the program guide;

instruct the apparatus of Fig. 1 to include or not to include programs having a certain rating, such as programs having a rating as unsuitable for children, in the program guide;

instruct the apparatus of Fig. 1 to include or not to include programs recommended by one or more critics in the program guide; and

perform any other appropriate action.

As described below, the viewer preference profile stored by the intelligent agent 130 and used as described below may comprise a simple data structure describing current program characteristics of programs viewed by a viewer and other information as stated above. It is appreciated, however, that the viewer preference profile may, in alternative embodiments of the present invention, take a wide variety of forms. For example, without limiting the generality of the foregoing, the viewer preference profile may comprise one or more rules abstracted from at least the current program characteristics of programs viewed by a viewer, the extraction and/or abstraction of such rules from the current program characteristics of programs viewed by a viewer and other information as stated above being possible using methods well-known in the art, particularly methods in use with rule-based expert systems.

Such rules, as is well known in the art, may comprise conditions and results to be carried out if the conditions are true. For example, such a rule might state that if the user preference level for news is greater than a given threshold and if a news program is scheduled within the next 30 minutes, a news alert should be presented on the screen. For the sake of simplicity in description, the case of a simple data structure will generally be described below, it being appreciated that other methods, such as, for example, a rule-based method, may also be used.

The intelligent agent 130 is also operative to customize the program schedule information received from the receiving unit 120 in accordance with one or more viewer preference profiles belonging to one or more viewers and to output a program guide comprising the customized program schedule information to the display apparatus 150 for display. It is appreciated that, in a case where more than one viewer preference profile is used, the plurality of viewer preference profiles may be combined by any appropriate method, including simply combining the profiles, giving complete preference to one profile over another profile, giving partial preference to one profile over another profile, or by any other appropriate combining method.

The term "customize" in its various forms, as used throughout the present specification and claims with reference to program schedule information to be comprised in a program guide, is used generally to refer to any kind of customization including, for example, one or more of the following:

changing the order in which programs appear in the program guide;

changing the order in which channels appear in the program guide;

removing certain programs from or adding certain programs to the program guide, the added programs typically comprising programs that were not previously displayed due to another customization;

highlighting or emphasizing certain programs in the program guide, possibly including multiple levels of highlighting or emphasis;

de-highlighting or deemphasizing certain programs in the program guide, possibly including multiple levels of de-highlighting or de-emphasis;

modifying a hierarchy, such as, for example, an icon-based hierarchy, of programs in the program guide;

modifying the appearance of an element of the program guide such as, for example, an icon, including modifying an icon to be non-objectionable for viewing by children;

displaying an alert comprising program schedule information;

customizing a channel to contain selected programs from the program guide, typically by creating a virtual channel comprising, for example, a list of times and channels on which preferred programs are broadcast at those times, to give a viewer the appearance that the viewer's preferred programs are all broadcast on the customized channel;

delivering an alert remind the viewer to record a program;

automatically recording a program; and

any other appropriate kind of customization.

It is appreciated that other factors in addition to a viewer preference profile may also be applied by the intelligent agent 130. Examples of such other factors and their typical use by the intelligent agent 130 include the following:

parental control information, which is well known in the art, may be used to eliminate certain programs from the program guide or to modify objectionable descriptions and/or icons so that they are suitable for viewing by children;

parental control or other information may be used to limit total viewing time or viewing during certain times of the day by removing programs falling outside the limitation from the program guide;

subscription information, typically including information on television services which have been subscribed to by a viewer, may be used to eliminate programs not subscribed for from the program guide;

rating information, typically including information on general viewer popularity of a program based on ratings as are well known in the art, may be used to modify the customization of the program guide, typically by including or promoting the importance of highly rated programs but possibly by excluding or reducing the importance of highly rated programs, and further possibly by modifying the viewer preference profile based on the rating information; and

language choice information, typically including information on a preferred language, may be used to display listings in a particular language or for program versions in a particular language, it being appreciated that viewer preference profile information on language viewing preferences may override language choice information.

The optional viewer preference profile loading apparatus 160, if present, may be used to load a recorded viewer preference profile of another viewer, including a viewer who has used another apparatus, similar to that of Fig. 1, at a different time and place. Such a recorded viewer preference profile may be provided on any appropriate recording medium, may be broadcast via the television network, or may be delivered from profile storage apparatus by any appropriate means. It is appreciated that a recorded viewer preference profile may typically be a profile of a well-known person, may be intended to provide customization of the program guide in a way similar to that which would be provided to the famous person, and may be provided for a fee or other consideration. The effect of using such a recorded viewer preference profile would be, approximately, to receive a customized program guide customized according to the preferences of the person who is the source of the recorded viewer preference profile.

Alternatively, a recorded viewer preference profile could be used as an anti-profile in the sense that customization could occur opposite to what would be the

result of using the recorded preference profile; that is, a particular program that was preferred according to the recorded viewer preference profile could be, for example, deemphasized.

Optionally, the profile loading apparatus 160, if present, may also be operative to record a viewer preference profile on any appropriate recording medium such as, for example, a diskette or an appropriate smart card. The recorded viewer preference profile may then be provided to another viewer having apparatus similar to that of Fig. 1 for loading as described above.

It is appreciated that the implementation of the present invention described above, wherein a program guide is transmitted to a television, comprises one particular implementation of the present invention, and that the scope of the present invention is not limited by the above-described implementation. In particular, it is appreciated that, with minor variations as is well known in the art, a customized program guide could be delivered to a viewer by, for example, one or more of the following methods:

conventional mail;

electronic mail, including conventional electronic mail, electronic mail delivered to a television, text-based electronic mail, graphics-based electronic mail, HTML-based electronic mail, or any other suitable type of electronic mail;

a personalized World Wide Web site on the Internet; and

wireless delivery to a portable electronic device such as a suitable beeper, palmtop device, personal organizer, watch, radio receiver, or any other suitable portable electronic device.

Reference is now made to Fig. 3, which is a simplified block diagram illustration of a preferred implementation of the intelligent agent 130 of Fig. 2. The apparatus of Fig. 3 preferably comprises viewing information analysis apparatus 170, which typically receives program schedule information from the receiving unit 120 of Fig. 2, as described above, as well as receiving television viewing information, as described above with reference to Fig. 2.

The apparatus of Fig. 3 also preferably comprises viewer preference profile update and storage apparatus 180. The viewing information and analysis

apparatus 170 is preferably operative to provide current program information and information on the current viewer, typically comprised in the television viewing information, as described above with reference to Fig. 2, to the update and storage apparatus 180. The update and storage apparatus 180 is preferably operative to store the received information in an appropriate viewer preference profile in the profile storage unit 140 of Fig. 2.

The apparatus of Fig. 3 also preferably comprises viewer preference profile retrieval apparatus 190 and program schedule customization apparatus 200. The retrieval apparatus 190 typically retrieves the viewer preference profile of a viewer under control of the program schedule customization apparatus 200 and sends the viewer preference profile to the program schedule customization apparatus 200.

The program schedule customization apparatus 200 preferably receives the viewer preference profile, as well as the program schedule information from the receiving unit 120 of Fig. 2. The program schedule customization apparatus 200 is preferably operative to customize the program schedule information received from the receiving unit 120 in accordance with one or more viewer preference profiles belonging to one or more viewers and to output a program guide comprising the customized program schedule information.

The viewing information analysis apparatus 170, the viewer preference profile update and storage apparatus 180, the view preference profile retrieval apparatus 190, and the program schedule customization apparatus 200 are typically implemented in software in one or more suitable microprocessors suitably equipped with memory, but it is appreciated that a hardware implementation may also be used.

Reference is now made to Fig. 4, which is a simplified flowchart illustration of a preferred method of operation of the viewing information analysis apparatus of Fig. 3. The method of Fig. 4 preferably includes the following steps:

When program schedule information is received, the information is processed (step 210). Program schedule information is generally received when the program schedule information is sent over the television network. The program schedule information may be sent periodically, may be sent when there is a change in program schedule information, or may be sent at other times. Processing program schedule

information preferably comprises updating a working copy of program schedule information kept in the intelligent agent 130 and used in other steps of the method of Fig. 4.

A check is made as to whether television viewing information has been received (step 220). Generally, television viewing information is received when there is a change in television viewing such as, for example: a new viewer begins viewing television according to viewer identification information; a television channel change occurs; or the television is turned on or turned off. Television viewing information may also comprise an indication that a viewer has responded to a customized alert positively, by tuning to the program named in the alert, or negatively, by not tuning to the program named in the alert. Preferably, such a positive response is taken to reinforce the preference which led to the alert. A negative response, on the other hand, is preferably taken to weaken or erase the preference which led to the alert.

If no television viewing information is received, the process of Fig. 4 preferably ends.

It is appreciated that, after step 220, further action need only be taken when some television viewing information is received, on the assumption that eventually some change in television viewing will occur and further action can be taken at that time. It is further appreciated that, to prevent a possibility of no television viewing information being received for a very long time such as, for example, for an entire day, step 220 may include a check for a very long time having passed since television information has been received and, in that case, the check of step 220 may preferably behave as if television viewing information, comprising viewed program information, has been received, in order to ensure that current television viewing information, even if unchanged, is eventually stored.

If television viewing information is found to have been received in step 220, a check is made as to whether the television viewing information comprises viewer identification information (step 230). If viewer identification information has been received, the identification of the current user is noted and preferably stored (step 240). Processing continues with step 260, described below.

If the check of step 230 does not show receipt of viewer identification information, a check is made as to whether viewed program information has been received (step 250). If not, the method of Fig. 4 preferably ends. If viewed program information was found to have been received in step 250, processing continues with step 260.

In step 260, viewed program information and/or viewer identification information are processed.

Reference is now made to Fig. 5, which is a simplified flowchart illustration of a preferred implementation of step 260 of Fig. 4. The method of Fig. 5 preferably comprises the following steps:

Checks are made as to whether the current viewer is a new viewer (step 270) and whether the end of the previous program has been reached, whether by a change in television viewing information or by reaching the end of a program according to the program schedule information (step 290). If either the check of step 270 or the check of step 290 is found to be true, new profile information is output. (step 280). The new profile information typically includes viewed program and viewer information.

In a case where the viewed program and viewer information indicate that the viewer has viewed a program for a short period of time, the new profile information may include surfing information, that is, an indication that the viewer prefers to surf, that is, to view programs only for a short period of time. The short period of time typically comprises a predetermined period of time, also termed herein a threshold.

The surfing information may include details such as, for example, how often the user surfs and for how long the user surfs. Alternatively, information about a program which the viewer has viewed for a short period of time may be ignored and may not be included in the new profile information. The term "short period of time", as used in the context of the explanation of step 280, may include one or more of the following:

a short absolute period of time such as, for example, less time than a threshold measured in minutes, for example, 2 minutes or 5 minutes; and

a short relative period of time such as, for example, less than a certain percentage of the scheduled time of a program.

It is appreciated that the short period of time may vary in length according to time of day, day of week, day of year, price of a particular program, or according to any other appropriate criterion. It is further appreciated that, in a case where a viewer views different portions of a program, the times during which each portion was viewed are preferably added before comparison to the threshold.

When the profile information includes information indicating that the viewer prefers to surf, customized electronic program guide information based on the profile information may be tailored for a viewer who prefers to surf, by including randomized program selections as preferred program selections, for example.

Reference is now made to Fig. 6, which is a simplified flowchart illustration of a preferred method of determining whether a viewer is engaged in surfing behavior in step 280 of Fig. 5. The method of Fig. 6 is self-explanatory.

It is appreciated that the method described above with reference to Figs. 4 - 6 is one particular embodiment of a method of operation of the viewing information analysis apparatus of Fig. 3. The method of Fig. 4 - 6 is provided by way of example only, and it is appreciated that other methods, including methods based on rule-based expert systems, as are well known in the art, may also be used.

Fig. 7 is a simplified flowchart illustration of a preferred method of operation of the program schedule customization apparatus 200 of Fig. 3. The method of Fig. 7 preferably comprises the following steps:

The program schedule customization apparatus receives program schedule information (step 300) and at least one viewer preference profile (step 310).

The program schedule customization apparatus then preferably identifies preferred programs by applying the at least one viewer preference profile to the program schedule information (step 320). It is appreciated that similar results could be obtained by modifying step 320 to identify the programs which are not preferred, and then modifying the remainder of the method of Fig. 7 accordingly.

It is also appreciated that, depending on the form of the viewer preference profiles, as described above with reference to Fig. 2, the implementation details of step 320 will vary accordingly. For example, in a case where the viewer preference profile comprises a simple data structure describing current program characteristics of programs

viewed by a viewer and other information, a preferred implementation of step 320 may comprise comparing the program schedule information to the information stored in the data structure and determining that programs in the program schedule whose characteristics resemble information stored in the data structure are preferred. For example, if information stored in the data structure indicates that news programs starting at 8:00PM or later are preferred, such a news program will be identified as preferred in step 320. In a case where the viewer preference profile comprises rules, for example, the rules will typically be applied to the program schedule information, as is well known in the art, to determine which programs are preferred.

The program schedule is then customized (step 330). As described above with reference to Fig. 2, such customization may take a wide variety of forms.

Reference is now made to Fig. 8A, which is a simplified partly pictorial, partly block diagram illustration of a television system comprising a subscriber unit constructed and operative in accordance with an alternative preferred embodiment of the present invention. The system of Fig. 8A is similar to the system of Fig. 1, except as described below.

The system of Fig. 8A comprises a headend 340 comprised in or operatively associated with a television network 350. The headend 340 may be similar to conventional television system headends, as are well known in the art, except as described below.

The headend 340 comprises a headend intelligent agent 360 and a headend profile storage unit 370, which may be similar respectively to the intelligent agent 130 of Fig. 1 and the profile storage unit 140 of Fig. 1, respectively, except as follows.

Television viewing information may be transmitted to the headend 340 by a modem 375, which may be any conventional modem such as, for example, a telephone modem connected to a telephone network or a cable modem connected to a cable network. The modem 375 is typically comprised in or operatively associated with the interface unit 110. Alternatively, any appropriate means of communicating between the interface unit 110 and the headend 340 may be supplied, such as, for example, a VSAT satellite connection (not shown), as is well known in the art. The received television

viewing information is processed in a manner similar to that described above with reference to the embodiment of Fig. 1.

The headend profile storage unit 370 is typically operative to store viewer preference profiles for a wide variety of viewers located at a multiplicity of sites. The intelligent agent 360 is operative to receive one or more viewer preference profiles associated with a particular site, such as a site 380, and to prepare customized program schedule information intended for the particular site. In the embodiment of Fig. 8A the headend 340 is operative to deliver the customized program schedule information to the particular site using methods well known in the art.

It is appreciated that, generally, the embodiment of Fig. 8A differs from the embodiment of Fig. 1 in that processing and storage largely occur in the headend 340. The embodiment of Fig. 8A may be preferable in a case where processing power may be provided more economically in a headend or in other cases. Furthermore, it is appreciated that, in the embodiment of Fig. 8A, certain types of customization may occur at the headend based on user preference profiles. For example, if users tend to prefer to watch a certain type of movie at a certain hour or hours of the night, that type of movie may be broadcast, either conventionally or in a near-video-on-demand system, at that hour or hours of the night. It is appreciated that other types of customization, as referred to above with respect to Fig. 2, may also occur at the headend.

It is further appreciated that other types of data processing and analysis may occur at the headend 340, the other types of data processing and analysis typically being directed to provide additional programming information to viewers. Without limiting the generality of the foregoing, it is appreciated that, at the headend 340, real-time information on a proportion or percentage of the audience viewing a particular program may be computed. The term "audience", as used throughout the present specification and claims, refers either to the sum total audience viewing all programs at a particular time, or to the total audience of viewers who are capable of receiving programs at a particular time. The real-time information may then be transmitted to subscribers and display information derived from the transmitted information may then be displayed on the display apparatus 100.

Typically, the display information may comprise an alert to a user of the display apparatus 100, similar to the alert 105, informing the user that a program on another channel is currently being viewed by a large proportion of the audience and optionally suggesting that the user tune to that program or offering the user a shortcut, as is well known in the art of television broadcasting, to quickly tune to that program. Alternatively, any appropriate method of displaying the display information, such as displaying a bar graph or other graph indicating the proportion of the audience currently viewing the program presently being viewed by the user or the proportion currently viewing some other program, may be used. It is appreciated that the display information may be displayed, for example, at one or more of the following times: throughout viewing of a program; for a short time when a user tunes to a program; and on demand by a user, typically expressed by pressing a designated button on a remote control unit (not shown) as is well known in the art.

Reference is now made to Fig. 8B which is a simplified partly pictorial, partly block diagram illustration of a television system comprising a subscriber unit constructed and operative in accordance with another alternative preferred embodiment of the present invention. The system of Fig. 8B is similar to the system of Fig. 8A, except that in Fig. 8B the profile storage unit 370 and the intelligent agent 360 are comprised in the interface unit 110.

The operation of the system of Fig. 8B is similar to the operation of the system of Fig. 8A, except that in the operation of the system of Fig. 8B the headend 340 is operative to deliver a user preference profile which is typically different for each site, along with program schedule information which is typically the same for each site. It is appreciated that the user preference profile may be delivered only relatively infrequently such as, for example, once per day or once per month or even less often, in which case the embodiment of Fig. 8B might be preferred because of a relatively small bandwidth required to deliver the user preference profile and the program schedule information.

Reference is now made to Figs. 9A - 9L, which are simplified pictorial representations of preferred embodiments of an electronic program guide, which may be displayed on the display of Fig. 1, of Fig. 8A, or of Fig. 8B. Each of Figs. 9A - 9L comprises, as described below, one screen display which may be part of an electronic

program guide. For the purposes of the discussion below of Figs. 9A - 9L it is assumed that the viewer preference profile governing electronic program guide customization shows a preference for news programs beginning at 8:00PM or later. It is appreciated that the same principles shown and described with reference to Figs. 9A - 9L apply to a wide variety of viewer preference profiles, including viewer preference profiles which are much more complicated than the given example.

The screen display of Fig. 9A shows a typical simplified example of a non-customized grid-type screen display, with time being shown in a first dimension and television channels being shown in a second dimension, the resulting grid being filled in with names of television programs scheduled for the indicated time and the indicated channel. As is well known in the art, various navigation techniques exist for a user of a program guide such as that of Fig. 9A to choose a given program, obtain more information about the program, book the program for future viewing, etc.

The screen display of Fig. 9B shows a typical simplified example of the screen display of Fig. 9A after customization. In Fig. 9B, news programs beginning at 8:00PM or later are emphasized. It is appreciated that, as described above, such emphasis may be by highlighting, by a change in color, or by other means. It is appreciated that such highlighting, change in color, or other means may comprise a multi-valued scale, such that, for example, different kinds of highlighting or different colors may represent different levels of emphasis.

The screen display of Fig. 9C shows an alternative typical simplified example of the screen display of Fig. 9A after customization. In Fig. 9C, channels having news programs beginning at 8:00PM or later have been reordered to appear at the beginning of the list of channels. It is appreciated that, in addition to reordering, emphasis as described above with reference to Fig. 9B may also be used.

The screen display of Fig. 9D shows a typical simplified example of an icon-based non-customized electronic program guide. In Fig. 9D, the icons 390 on the screen display represent program subject matter such as, for example, comedy programs or, as indicated by a news icon 395, news programs and, as indicated by a drama icon 397, drama programs. The viewer may preferably select, using methods well known in the art such as by moving a cursor and selecting with a mouse (not shown) or other input

device well-known in the art, any of the icons 390 of Fig. 9D in order to obtain more detailed information on programs falling under the selected subject matter. In Fig. 9E, the icons 390, such as an 8:00PM icon 400, represent particular times at which programs start, and icons may preferably be selected as described above with reference to Fig. 9D.

It is appreciated that a wide variety of different methods of icon organization may be provided, of which those of Figs. 9D and 9E are only examples. It is further appreciated that, using methods well known in the art, a viewer may choose a method of icon organization or create a custom method of icon organization. For example, icons may be used to represent listings for a particular series of programs or set of related series of programs, including a user-defined series of programs, which method of organization may be preferable in a case where users desire to see programs of a particular series.

The screen display of Fig. 9F shows a typical simplified example of a screen display after a viewer selects the news icon 395 of Fig. 9D. The screen display of Fig. 9G shows a typical simplified example of a screen display after a viewer selects the 8:00PM icon 400 of Fig. 9E.

Figs. 9H - 9K show typical simplified examples of the screen displays 9D - 9G, respectively, customized to emphasize news programs beginning at 8:00PM or later. It is appreciated that such icon-based customization may take a wide variety of forms, including: different forms of emphasis; re-ordering the hierarchical relationship between different icons and screens of icons; creating new icons; removing icons; and other forms of icon-based customization. It will be appreciated that such methods of changing the appearance and the hierarchical relationships of icons are well known in the art of computers and that those methods or any other appropriate methods could be applied to the present invention.

It is appreciated that the screen displays of Figs. 9D - 9G may be hierarchical and, generally, may be hierarchical to any desired depth, with a plurality of choices being generally possible at each level, and with many possible selections and/or arrangements of icons displayed at each level. To illustrate another possible level of hierarchy, Fig. 9L shows a possible hierarchical drama screen that may be displayed after user selection of the drama icon 397 of Fig. 9D.

It is further appreciated that, in Figs. 9A - 9K, any icon may be associated with additional material, which additional material may be presented to the user upon request, such as by pressing a particular button or by any other appropriate method. The additional material preferably comprises any material associated with the subject matter of the icon, particularly material which might help clarify to the user the meaning of the icon and of its underlying content. For example, and without limiting the generality of the foregoing, the additional material may comprise one or more of the following: audio material; visual material; audio-visual material; multimedia material; a computer program or other related material comprising computer instructions or software; and one or more previews of one or more associated programs. Any appropriate method known in the art, such as force tuning to a special program or downloading additional material on demand, may be used to present the additional material to the user.

It is appreciated that the additional material may be particularly useful in systems where one of a plurality of languages and/or dialects is preferred by each user and in cases where very complex character sets, such as, for example, Chinese characters and/or characters in certain other Oriental languages, are used to write a language. In such cases, audio material comprised in the additional material may provide an audio description in cases where providing a written description is technically difficult because of bandwidth limitations in presenting complex character sets or other limitations. In a case where one of a plurality of languages and/or dialects is preferred by each user, the language and/or dialect used in the additional material may be determined by one of the following: user preference information; conditional access parameters such as, for example, geographic information, as is well known in the art; or by any other appropriate method.

It is appreciated that various features of the invention which are, for clarity, described in the contexts of separate embodiments may also be provided in combination in a single embodiment. Conversely, various features of the invention which are, for brevity, described in the context of a single embodiment may also be provided separately or in any suitable subcombination.

It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the scope of the invention is defined only by the claims which follow:

What is claimed is:

CLAIMS

1. A television system comprising:

a television network; and

transmitting apparatus for transmitting program schedule information to a multiplicity of subscriber units, at least one of said multiplicity of subscriber units including:

a receiving unit for receiving said program schedule information from said television network;

a profile storage unit for storing at least one viewer preference profile of at least one television viewer;

an intelligent agent for customizing said program schedule information based, at least in part, on said viewer preference profile, to produce a program guide comprising customized program schedule information; and

display apparatus for displaying the program guide.

2. A subscriber unit for use in a television system comprising a television network and transmitting apparatus for transmitting program schedule information, the subscriber unit comprising:

a receiving unit for receiving said program schedule information;

a profile storage unit for storing at least one viewer preference profile of at least one television viewer;

an intelligent agent for customizing said program schedule information based, at least in part, on said viewer preference profile, to produce a program guide comprising customized program schedule information; and

display apparatus for displaying the program guide.

3. A television system comprising:

a television network; and

transmitting apparatus for transmitting program schedule information to a multiplicity of subscriber units, the transmitting apparatus comprising a headend, the headend including:

a profile storage unit for storing at least one viewer preference profile of at least one television viewer associated with one of said multiplicity of subscriber units; and

an intelligent agent for customizing said program schedule information based, at least in part, on said viewer preference profile, to produce customized program schedule information,

wherein said transmitting apparatus is operative to transmit the customized program schedule information to said one of said multiplicity of subscriber units, and

at least one of said multiplicity of subscriber units includes:

a receiving unit for receiving said customized program schedule information from said television network; and

display apparatus for displaying a program guide comprising the customized program schedule information.

4. A headend for use in a television system comprising a television network and transmitting apparatus for transmitting customized program schedule information to at least one subscriber unit, the headend comprising:

a profile storage unit for storing at least one viewer preference profile of at least one television viewer associated with said at least one subscriber unit; and

an intelligent agent for customizing said program schedule information based, at least in part, on said viewer preference profile, to produce customized program schedule information.

5. Apparatus according to any of the above claims and wherein said transmitting apparatus comprises network transmitting apparatus for transmitting over said television network.

6. Apparatus according to any of the above claims and wherein said transmitting apparatus comprises:

recording apparatus for recording information on a removable medium; and

means for sending said removable medium to a subscriber location comprising said subscriber unit,

and said subscriber unit includes loading apparatus for loading said information from said removable medium into said subscriber unit.

7. Apparatus according to any of the above claims and wherein said intelligent agent also comprises profile determination apparatus for determining viewer preference profile information for at least one television viewer and for providing said viewer preference profile information to said profile storage unit for storage as a viewer preference profile,

wherein said profile determination apparatus determines said viewer preference profile information by monitoring television viewing behavior of said at least one television viewer.

8. Apparatus according to claim 7 and wherein said television viewing behavior comprises viewing at least a portion of at least one viewed television program.

9. Apparatus according to claim 8 and wherein said television viewing behavior comprises said television viewer viewing only a portion of at least one viewed television program.

10. Apparatus according to claim 9 and wherein said profile determination apparatus compares a length of said portion of said at least one viewed television program to a predetermined viewing threshold length to determine whether said length is greater than said threshold length, and

wherein said profile determination apparatus determines said viewer preference profile information based, at least in part, on whether said length is greater than said threshold length.

11. Apparatus according to claim 10 and wherein, when said length is determined to be less than said threshold length, said profile determination apparatus determines said viewer preference profile information without regard to said viewing only a portion of said at least one television program.

12. Apparatus according to claim 10 and wherein, when said portion is determined to be less than said threshold, said profile determination apparatus determines that said viewer is engaged in channel surfing behavior, and

said profile determination apparatus determines said viewer preference profile information based, at least in part, on said channel surfing behavior.

13. Apparatus according to any of claims 7 - 12 and wherein said program schedule information comprises a first plurality of criteria, at least one of said first plurality of criteria being associated with each of a second plurality of television programs, and

said profile determination apparatus determines said viewer preference profile information based, at least in part, on at least one of said plurality of criteria associated with said at least one viewed television program.

14. Apparatus according to any of claims 7 - 13 and wherein said profile determination apparatus determines said viewer preference profile information, at least in part, in accordance with input provided by said at least one television viewer.

15. Apparatus according to any of claims 7 - 14 and wherein said profile determination apparatus determines viewer preference profile information from a reaction of said at least one television viewer to previously displayed customized program schedule information.

16. Apparatus according to any of the above claims and wherein each said viewer preference profile comprises a viewer preference profile of exactly one viewer.

17. Apparatus according to any of claims 1 - 15 and wherein at least one said viewer preference profile comprises a viewer preference profile of a plurality of viewers.

18. Apparatus according to any of the above claims and also comprising viewer preference profile loading apparatus for providing a recorded viewer preference profile to the profile storage unit for storage.

19. Apparatus according to claim 18 wherein said viewer preference profile loading apparatus receives said recorded viewer preference profile via said television network.

20. Apparatus according to either claim 18 or claim 19 and wherein said viewer preference profile loading apparatus receives said viewer preference profile from profile storage apparatus located remotely thereto.

21. Apparatus according to any of the preceding claims and wherein said customizing comprises emphasizing at least a portion of said customized program schedule information based, at least in part, on said viewer preference profile.

22. Apparatus according to any of the preceding claims and wherein said customizing comprises deemphasizing at least a portion of said customized program schedule information based, at least in part, on said viewer preference profile.

23. Apparatus according to any of the preceding claims and wherein said customizing comprises tailoring a custom channel based, at least in part, on said viewer preference profile.

24. Apparatus according to any of the preceding claims and wherein said customizing comprises automatically tuning to a program selected based, at least in part, on said viewer preference profile.

25. Apparatus according to any of the preceding claims and wherein said customizing comprises automatically recording, on recording apparatus, a program selected based, at least in part, on said viewer preference profile.

26. Apparatus according to any of the preceding claims and wherein said customizing comprises ordering at least some of said customized program schedule information based, at least in part, on said viewer preference profile.

27. Apparatus according to any of the preceding claims and wherein said display apparatus is operative to display an on-screen alert comprising at least part of said customized program schedule information.

28. Apparatus according to claim 27 and wherein said alert comprises an unsolicited alert.

29. Apparatus according to claim 28 and wherein said unsolicited alert comprises audience viewing information comprising an indication of a proportion of an audience currently viewing a program.

30. Apparatus according to claim 29 and wherein said program comprises a program currently being viewed by a viewer.

31. Apparatus according to claim 29 and wherein said program comprises a program not currently being viewed by a viewer.

32. Apparatus according to either claim 27 or claim 28 and wherein said display apparatus displays said on-screen alert a predetermined period of time before a

scheduled starting time of a television program, said at least part of said customized program schedule information comprising information associated with said television program.

33. Apparatus according to any of the above claims and wherein said customizing comprises displaying an indication of a proportion of an audience currently viewing a program.

34. Apparatus according to claim 33 and wherein said proportion of an audience comprises a proportion of an audience viewing a program currently being viewed by a viewer.

35. Apparatus according to claim 33 and wherein said proportion of an audience comprises a proportion of an audience viewing a program not currently being viewed by a viewer.

36. Apparatus according to any of the preceding claims and wherein said display apparatus comprises an icon-based guide generator for producing an icon-based hierarchical program guide comprising said program schedule information, and

the program guide comprises the icon-based hierarchical program guide.

37. A television system comprising:

a television network; and

transmitting apparatus for transmitting program schedule information to a multiplicity of subscriber units, each subscriber unit including:

a receiving unit for receiving said program schedule information from said television network;

an icon-based guide generator for producing a program guide comprising an icon-based hierarchical program guide comprising said program schedule information; and

display apparatus for displaying said program guide.

38. A subscriber unit for use in a television system comprising a television network and transmitting apparatus for transmitting program schedule information, the subscriber unit comprising:

a receiving unit for receiving said program schedule information from said television network;

an icon-based guide generator for producing a program guide comprising an icon-based hierarchical program guide comprising said program schedule information; and

display apparatus for displaying said program guide.

39. A method for providing a program guide in a television system, the method comprising:

providing a television network; and

transmitting program schedule information to a multiplicity of subscriber units, each subscriber unit performing the following steps:

receiving said program schedule information from said television network;

storing at least one viewer preference profile of at least one television viewer;

employing an intelligent agent to customize said program schedule information based, at least in part, on said viewer preference profile, to produce a program guide comprising customized program schedule information; and

displaying the program guide.

40. A method for providing a program guide in a television system comprising a television network and transmitting apparatus for transmitting program schedule information, the method comprising:

receiving said program schedule information;

storing at least one viewer preference profile of at least one television viewer;

employing an intelligent agent to customize said program schedule information based, at least in part, on said viewer preference profile, to produce a program guide comprising customized program schedule information; and

displaying the program guide.

41. A method for providing a program guide in a television system, the method comprising:

providing a television network; and

transmitting program schedule information to a multiplicity of subscriber units,

wherein the step of transmitting comprises:

storing at least one viewer preference profile of at least one television viewer associated with one of said multiplicity of subscriber units;

employing an intelligent agent to customize said program schedule information based, at least in part, on said viewer preference profile, to produce customized program schedule information;

transmitting the customized program schedule information to said one of said multiplicity of subscriber units;

receiving, at said one of said multiplicity of subscriber units, said customized program schedule information from said television network; and

displaying a program guide comprising the customized program schedule information.

42. A method for providing a program guide in a television system comprising a television network and transmitting apparatus for transmitting customized program schedule information, the method comprising:

storing at least one viewer preference profile of at least one television viewer associated with one of said multiplicity of subscriber units; and

customizing said program schedule information based, at least in part, on said viewer preference profile, to produce customized program schedule information.

43. A method for providing a program guide in a television system, the method comprising:

providing a television network; and

transmitting program schedule information to a multiplicity of subscriber units, each subscriber unit performing the following steps:

receiving said program schedule information;

producing a program guide comprising an icon-based hierarchical program guide comprising said program schedule information; and

displaying said program guide.

44. A method for providing a program guide in a television system comprising a television network and transmitting apparatus for transmitting program schedule information, the method comprising:

receiving said program schedule information;

producing a program guide comprising an icon-based hierarchical program guide comprising said program schedule information; and

displaying said program guide.

45. A headend for use in a television system comprising a television network and transmitting apparatus for transmitting customized program schedule information to a multiplicity of subscriber units, the transmitting apparatus comprising the headend, the headend comprising:

a profile creation unit for creating at least one viewer preference profile of at least one television viewer associated with one of said multiplicity of subscriber units, based on viewer information associated with said one of said multiplicity of subscriber units; and

a transmission unit for transmitting said at least one viewer preference profile to said one of said multiplicity of subscriber units.

46. A method for providing a program guide in a television system comprising a television network and transmitting apparatus for transmitting customized

program schedule information to a multiplicity of subscriber units, the method comprising:

creating at least one viewer preference profile of at least one television viewer associated with one of said multiplicity of subscriber units, based on viewer information associated with said one of said multiplicity of subscriber units; and

transmitting said at least one viewer preference profile to said one of said multiplicity of subscriber units.

47. A method for providing a viewer preference profile in a television system comprising a plurality of subscriber units, the method comprising:

recording, at a first subscriber unit, a viewer preference profile on a removable medium;

loading, at a second subscriber unit, said viewer preference profile from said recording medium; and

customizing a program guide, at said second subscriber unit, based, at least in part, on said viewer preference profile.

48. A method for providing audience information to a viewer of a television system, the method comprising:

collecting viewing data from a multiplicity of viewers of a television system;

computing audience information from the collected viewing data; and

transmitting the computed audience information to a viewer of the television system.

49. A method according to claim 48 and also comprising:

displaying the computed audience information to the viewer of the television system.

50. A method according to either claim 48 or claim 49 and wherein the computed audience information comprises real-time computed audience information.

51. A method for providing a program guide in a television system comprising a television network and transmitting apparatus for transmitting information to a multiplicity of subscriber units, the method comprising:

creating at least one viewer preference profile of at least one television viewer associated with one of said multiplicity of subscriber units, based on viewer information associated with said one of said multiplicity of subscriber units;

creating a customized program guide based, at least in part, on said at least one viewer preference profile; and

transmitting said customized program guide to said one of said multiplicity of subscriber units.

52. A method according to claim 51 and wherein said transmitting step comprises transmitting via at least one of the following:

conventional mail;

electronic mail;

provision of a World Wide Web site comprising said customized program guide; and

wireless transmission to a portable electronic receiving device.

53. Apparatus according to any of claims 36 - 38 and wherein said icon-based hierarchical program guide comprises a plurality of icons, and

at least one of said plurality of icons is associated with additional information, said additional information being provided to a user upon request.

54. Apparatus according to claim 53 and wherein said additional information comprises at least one of the following: audio material; visual material; audio-visual material; multimedia material; a computer program; and at least one preview of at least one program.

55. Apparatus according to either claim 53 or claim 54 and wherein said additional information comprises a plurality of customized items of information, and

at least one of said plurality of customized items of information is provided to said user based, at least in part, on at least one of the following: a user preference; a conditional access parameter; and a region in which said user is located.

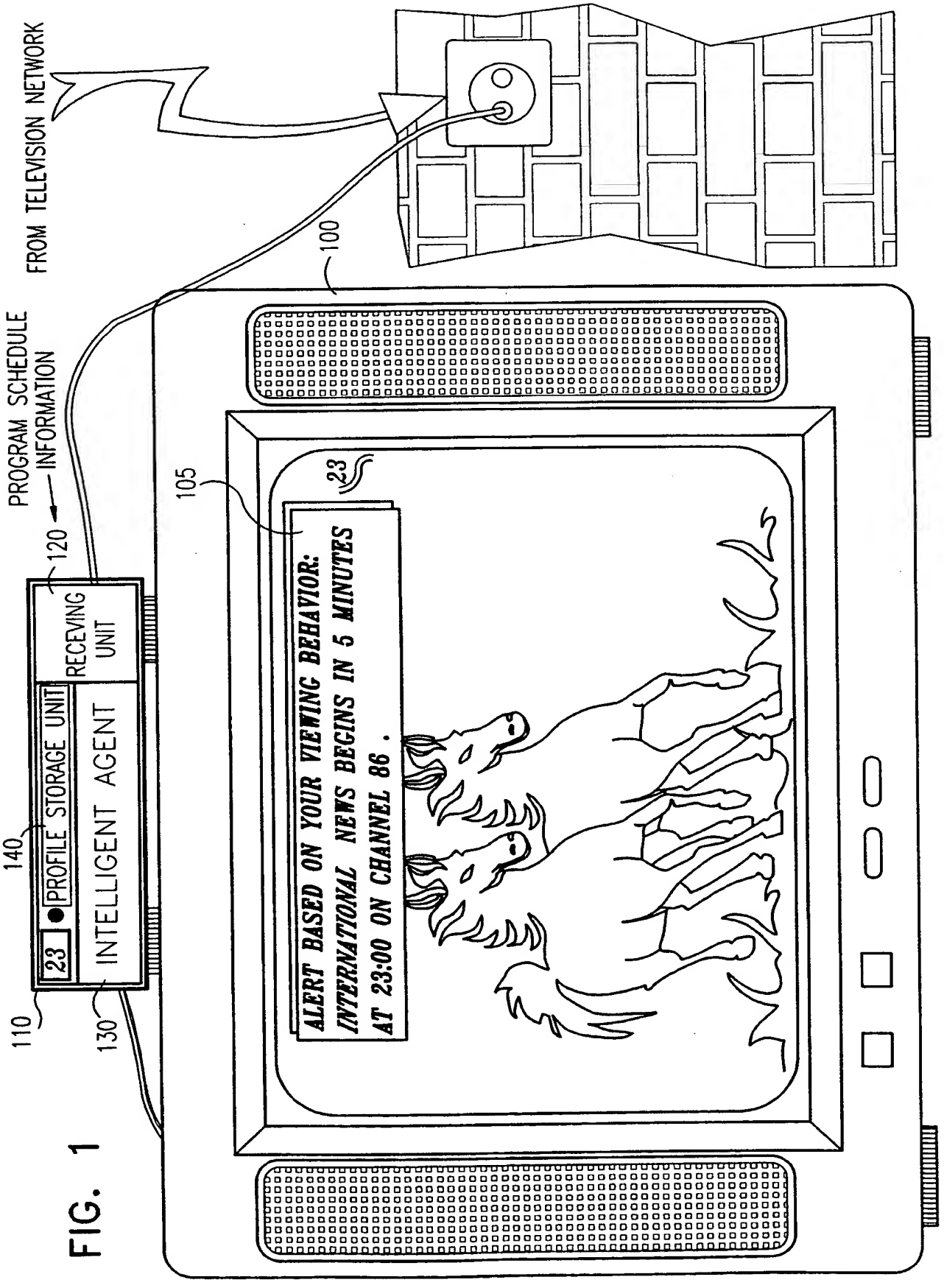
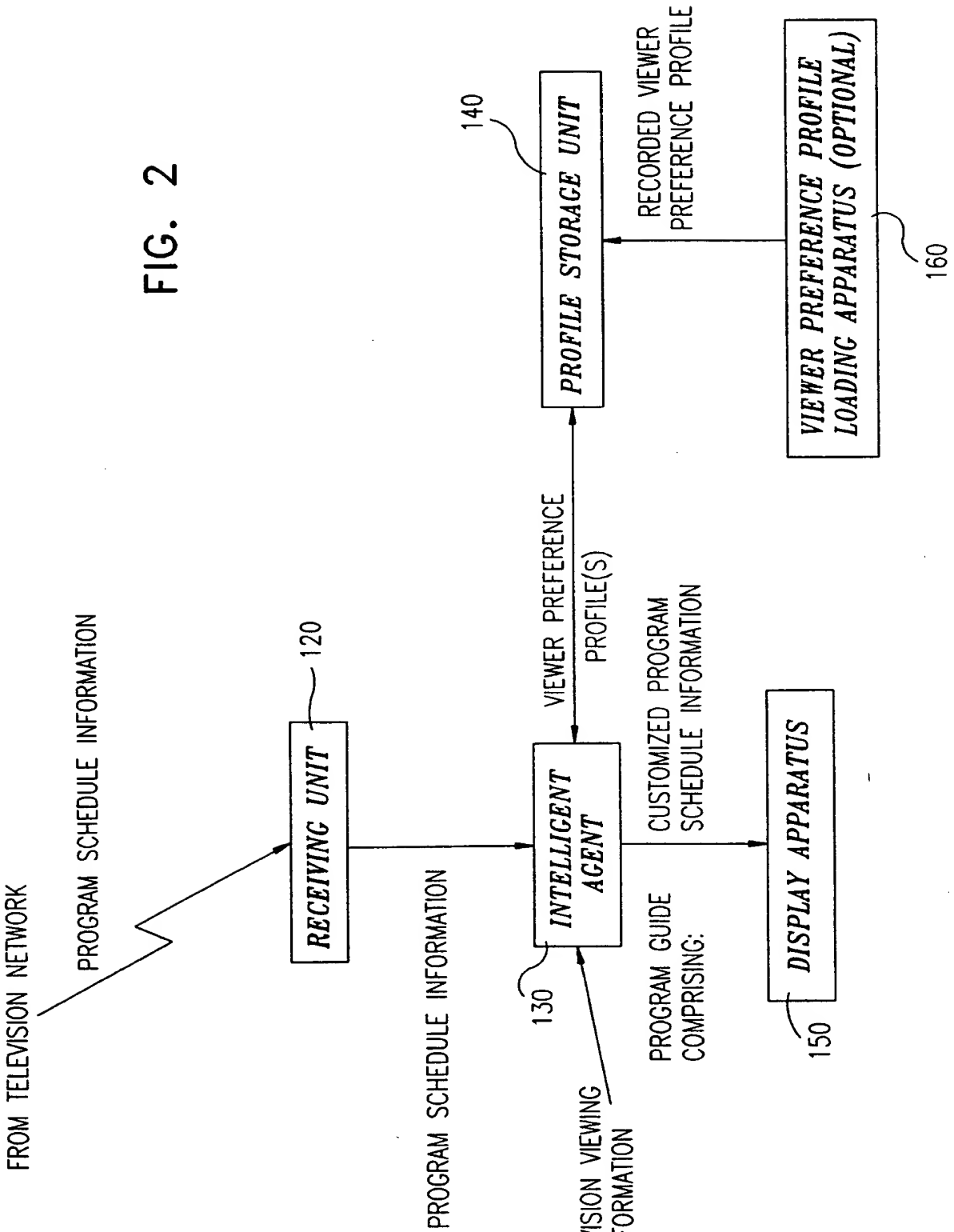

FROM TELEVISION NETWORK
PROGRAM SCHEDULE INFORMATION
100
105
120
RECEVING UNIT
140
PROFILE STORAGE UNIT
23
INTELLIGENT AGENT
110
130
ALERT BASED ON YOUR VIEWING BEHAVIOR:
INTERNATIONAL NEWS BEGINS IN 5 MINUTES
AT 23:00 ON CHANNEL 86 .

FIG. 1

FIG. 2


FROM TELEVISION NETWORK
PROGRAM SCHEDULE INFORMATION
RECEIVING UNIT
120
PROGRAM SCHEDULE INFORMATION
INTELLIGENT AGENT
130
TELEVISION VIEWING INFORMATION
VIEWER PREFERENCE
PROFILE(S)
PROFILE STORAGE UNIT
140
RECORDED VIEWER PREFERENCE PROFILE
VIEWER PREFERENCE PROFILE LOADING APPARATUS (OPTIONAL)
160
CUSTOMIZED PROGRAM SCHEDULE INFORMATION
PROGRAM GUIDE COMPRISING:
DISPLAY APPARATUS
150

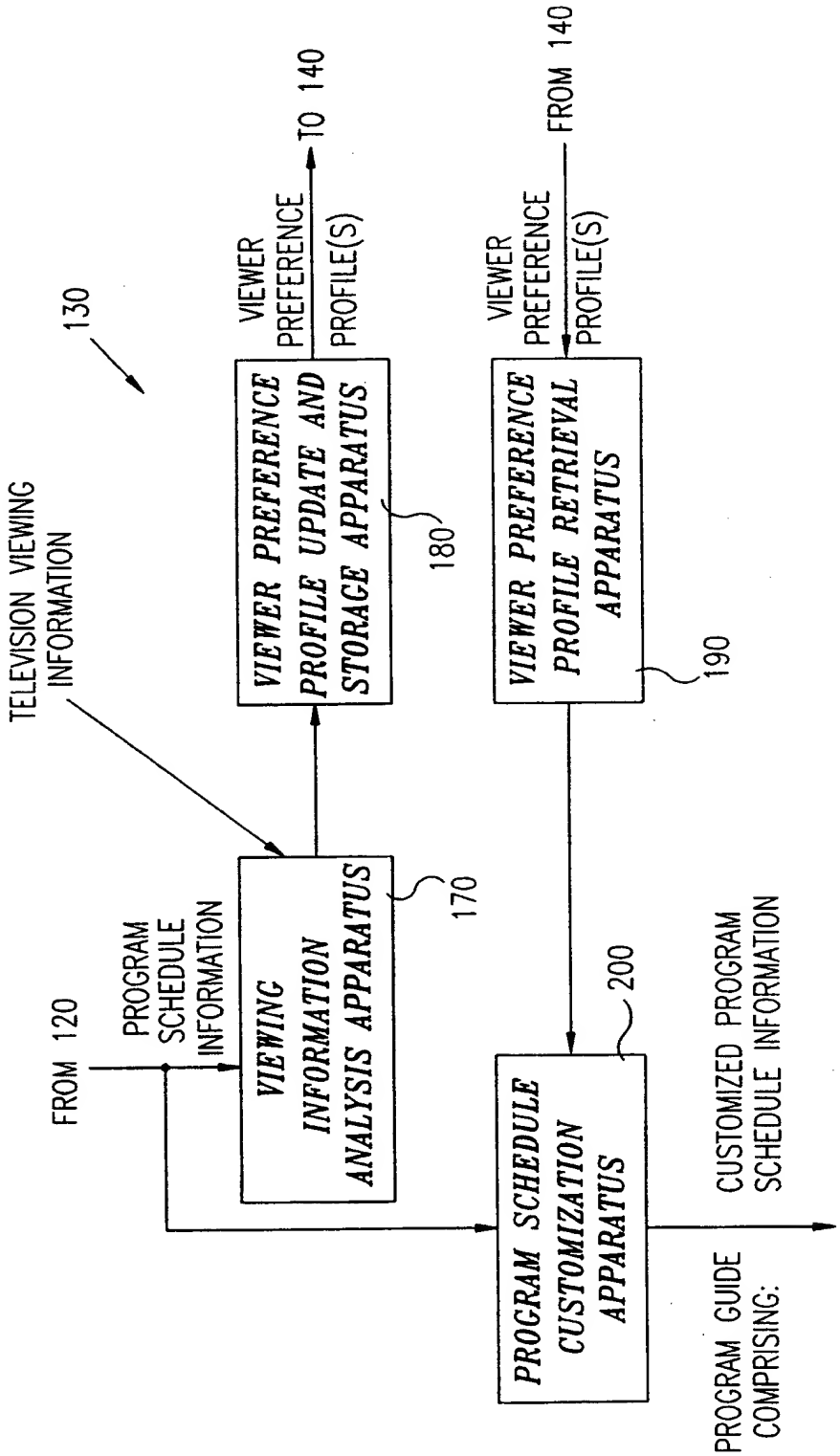
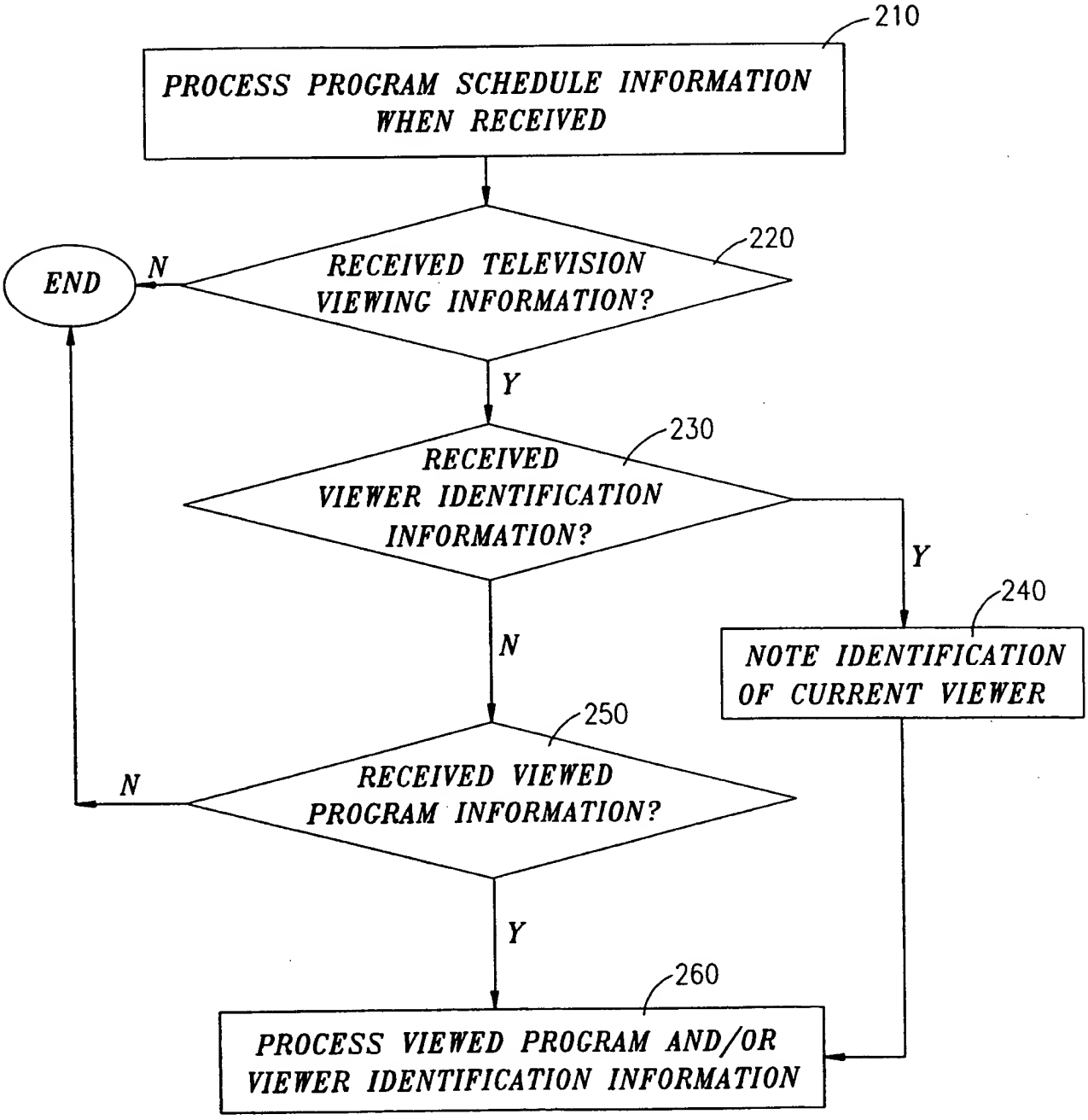

130
TELEVISION VIEWING INFORMATION
FROM 120
PROGRAM SCHEDULE INFORMATION
VIEWING INFORMATION ANALYSIS APPARATUS
170
VIEWER PREFERENCE PROFILE UPDATE AND STORAGE APPARATUS
180
VIEWER PREFERENCE PROFILE(S)
TO 140
VIEWER PREFERENCE PROFILE RETRIEVAL APPARATUS
190
VIEWER PREFERENCE PROFILE(S)
FROM 140
PROGRAM SCHEDULE CUSTOMIZATION APPARATUS
200
CUSTOMIZED PROGRAM SCHEDULE INFORMATION
PROGRAM GUIDE COMPRISING:

FIG. 3

FIG. 4


210
PROCESS PROGRAM SCHEDULE INFORMATION WHEN RECEIVED
220
RECEIVED TELEVISION VIEWING INFORMATION?
END
N
Y
230
RECEIVED VIEWER IDENTIFICATION INFORMATION?
Y
240
NOTE IDENTIFICATION OF CURRENT VIEWER
N
250
RECEIVED VIEWED PROGRAM INFORMATION?
N
Y
260
PROCESS VIEWED PROGRAM AND/OR VIEWER IDENTIFICATION INFORMATION

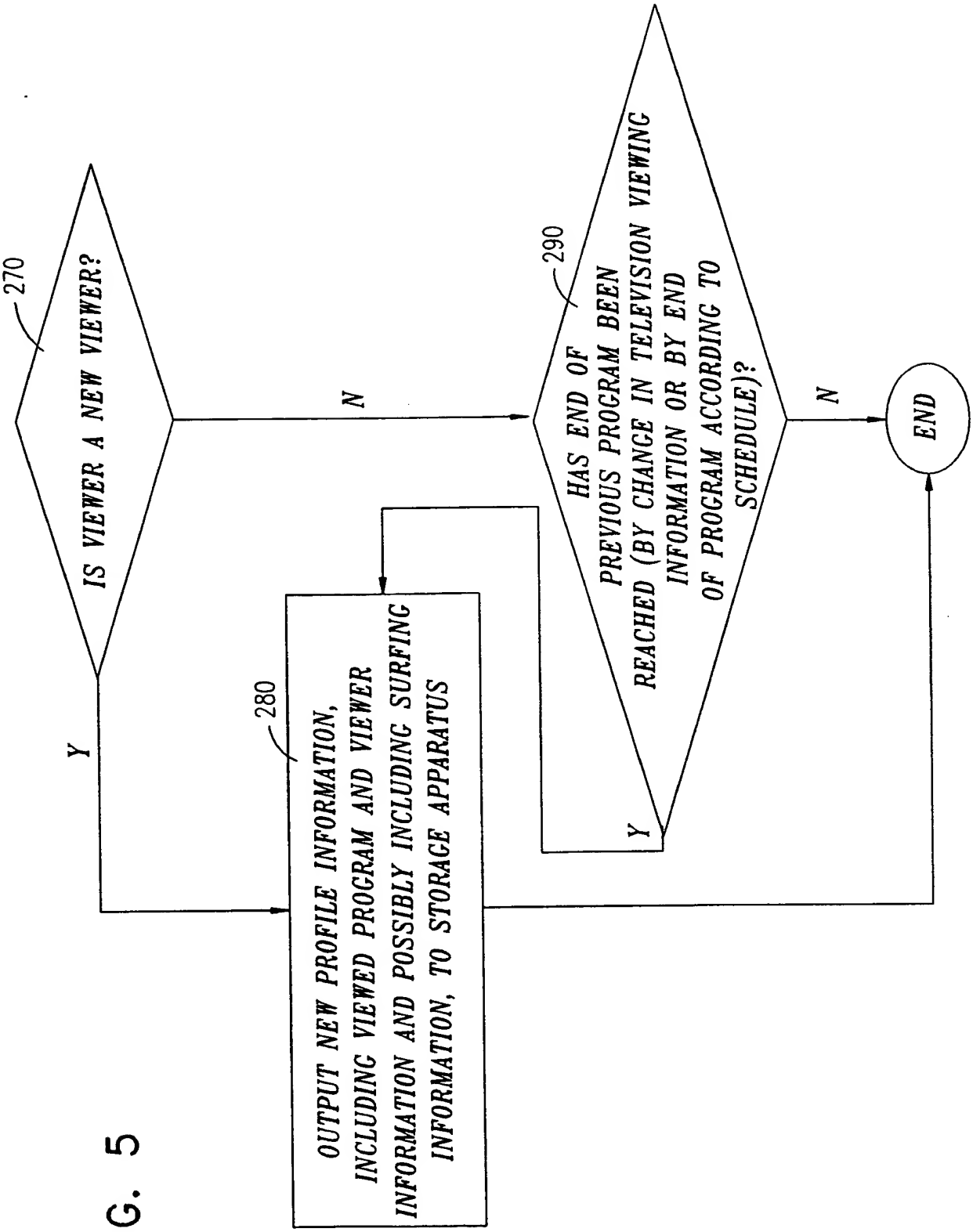

270
IS VIEWER A NEW VIEWER?
Y
N
280
OUTPUT NEW PROFILE INFORMATION, INCLUDING VIEWED PROGRAM AND VIEWER INFORMATION AND POSSIBLY INCLUDING SURFING INFORMATION, TO STORAGE APPARATUS
290
HAS END OF PREVIOUS PROGRAM BEEN REACHED (BY CHANGE IN TELEVISION VIEWING INFORMATION OR BY END OF PROGRAM ACCORDING TO SCHEDULE)?
Y
N
END

FIG. 5

FIG. 6

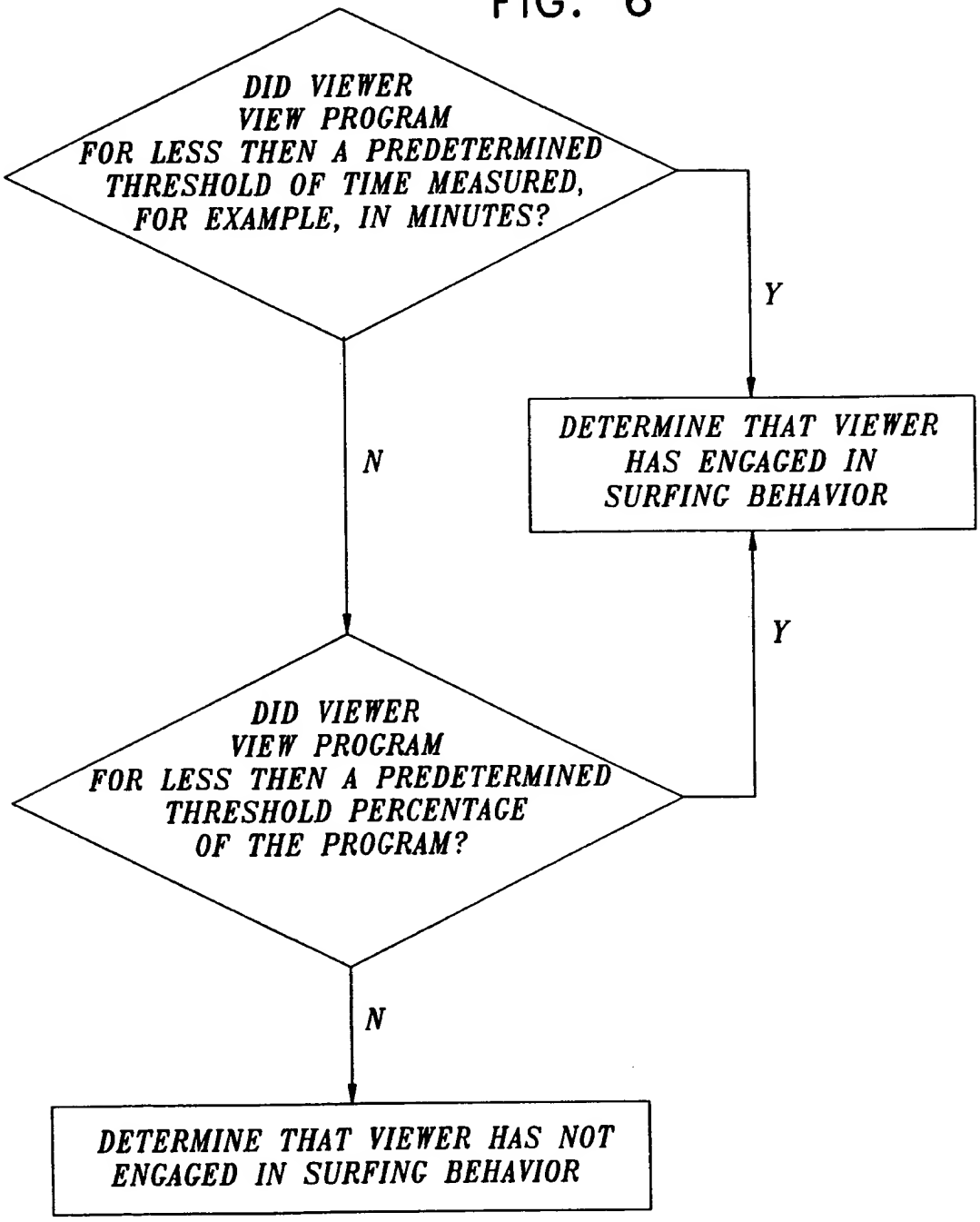
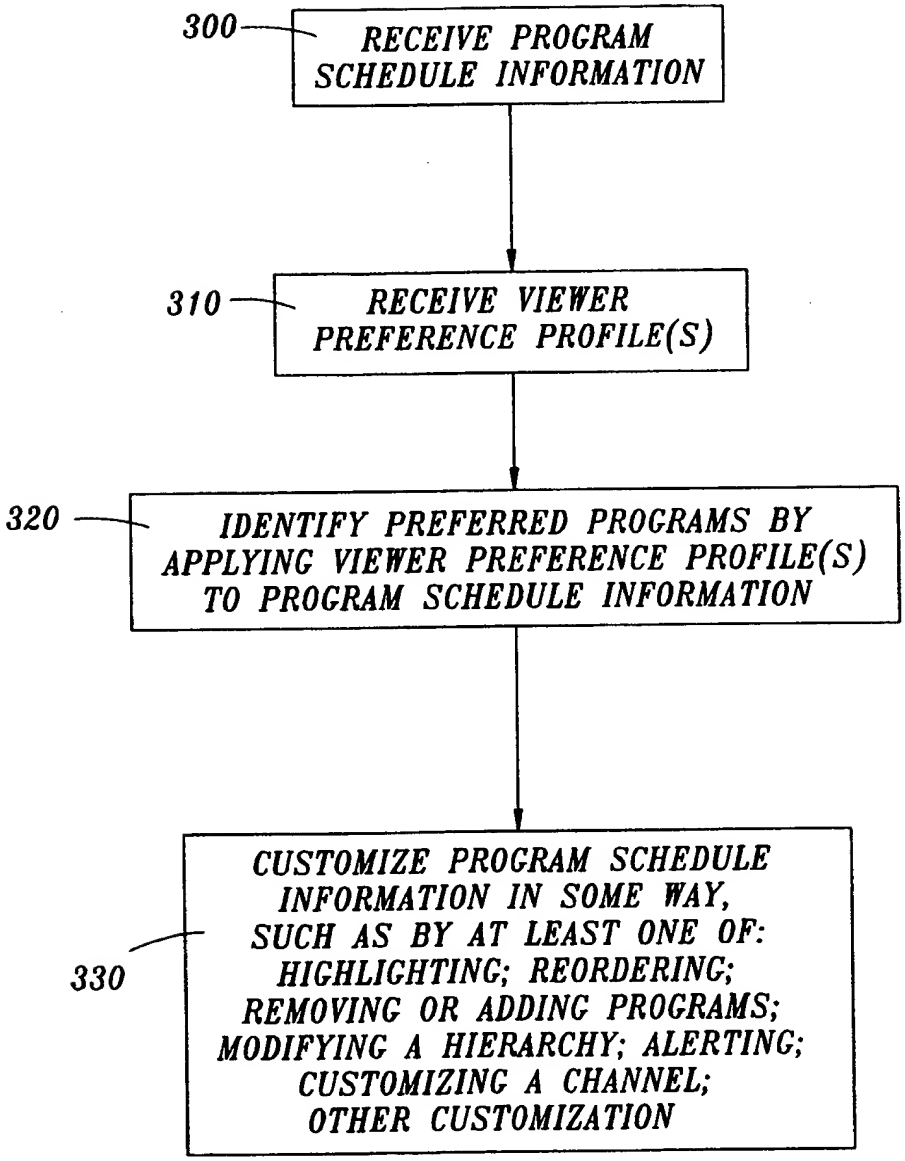

DID VIEWER VIEW PROGRAM FOR LESS THEN A PREDETERMINED THRESHOLD OF TIME MEASURED, FOR EXAMPLE, IN MINUTES?
Y
N
DETERMINE THAT VIEWER HAS ENGAGED IN SURFING BEHAVIOR
Y
DID VIEWER VIEW PROGRAM FOR LESS THEN A PREDETERMINED THRESHOLD PERCENTAGE OF THE PROGRAM?
N
DETERMINE THAT VIEWER HAS NOT ENGAGED IN SURFING BEHAVIOR

FIG. 7


300
RECEIVE PROGRAM SCHEDULE INFORMATION
310
RECEIVE VIEWER PREFERENCE PROFILE(S)
320
IDENTIFY PREFERRED PROGRAMS BY APPLYING VIEWER PREFERENCE PROFILE(S) TO PROGRAM SCHEDULE INFORMATION
330
CUSTOMIZE PROGRAM SCHEDULE INFORMATION IN SOME WAY, SUCH AS BY AT LEAST ONE OF: HIGHLIGHTING; REORDERING; REMOVING OR ADDING PROGRAMS; MODIFYING A HIERARCHY; ALERTING; CUSTOMIZING A CHANNEL; OTHER CUSTOMIZATION

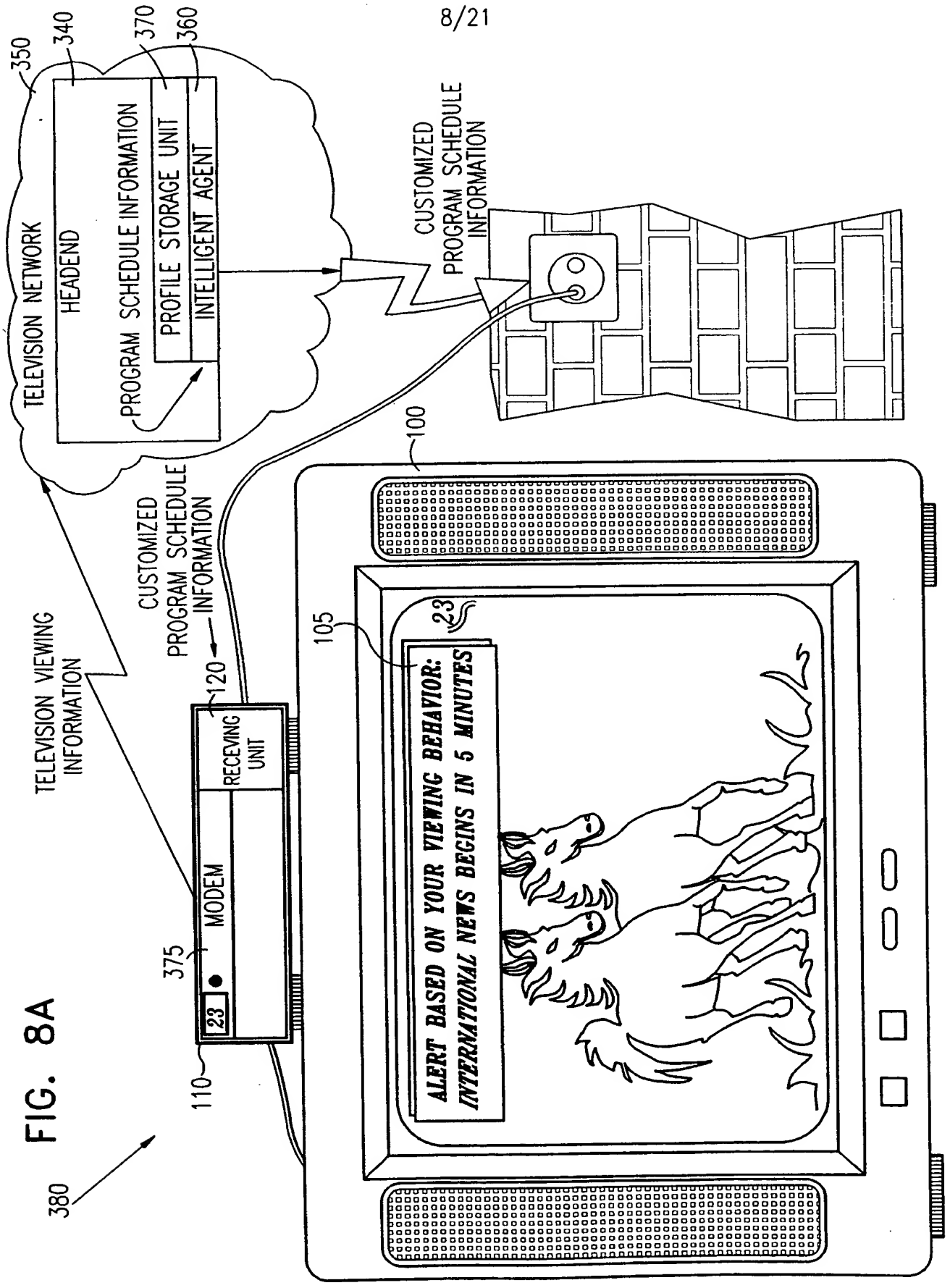

350
340
370
360
TELEVISION NETWORK
HEADEND
PROGRAM SCHEDULE INFORMATION
PROFILE STORAGE UNIT
INTELLIGENT AGENT
CUSTOMIZED PROGRAM SCHEDULE INFORMATION
100
TELEVISION VIEWING INFORMATION
CUSTOMIZED PROGRAM SCHEDULE INFORMATION
120
105
23
ALERT BASED ON YOUR VIEWING BEHAVIOR:
INTERNATIONAL NEWS BEGINS IN 5 MINUTES
RECEIVING UNIT
MODEM
23
375
110
380

FIG. 8A

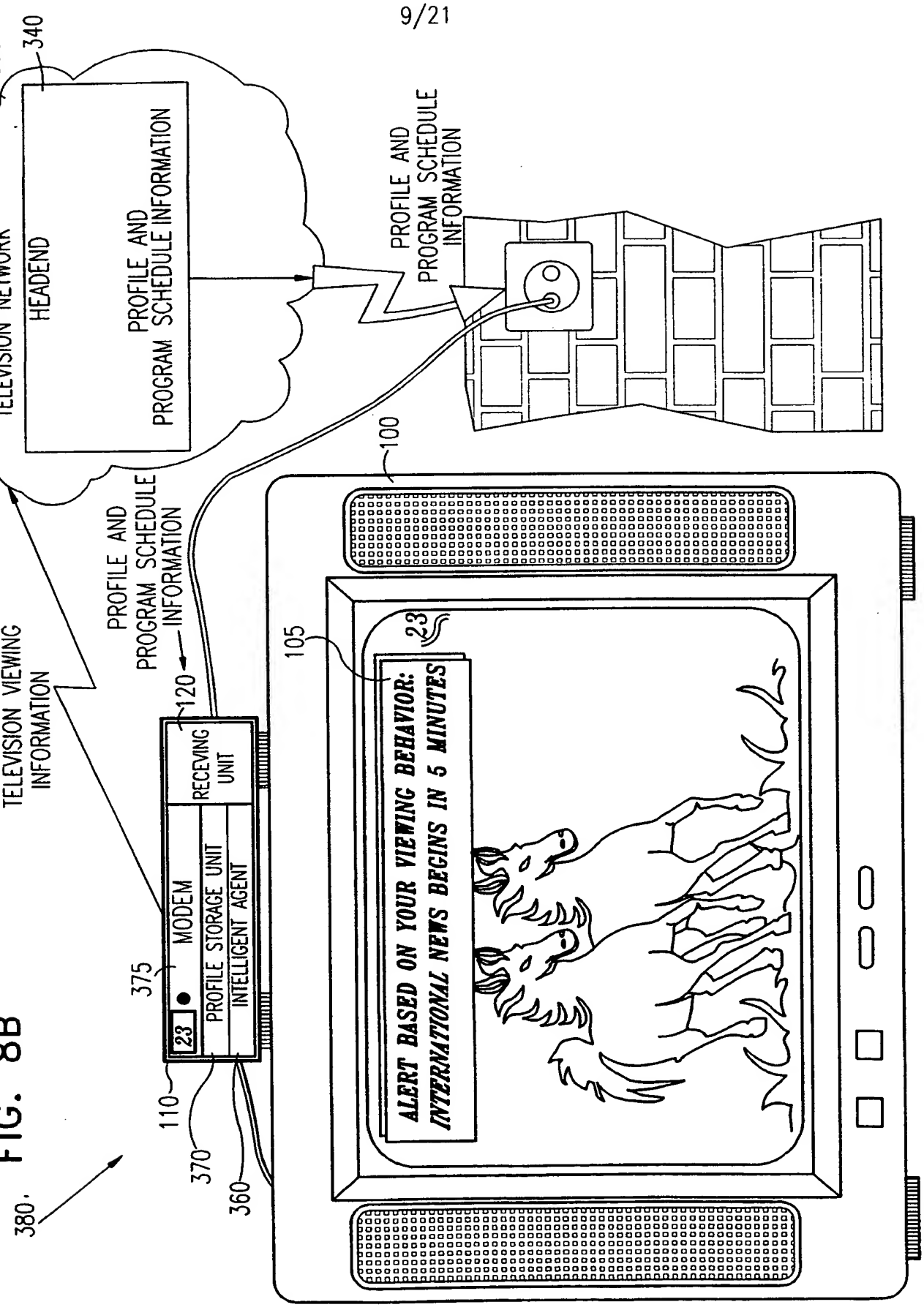

TELEVISION NETWORK
HEADEND
PROFILE AND PROGRAM SCHEDULE INFORMATION
350
340
PROFILE AND PROGRAM SCHEDULE INFORMATION
100
TELEVISION VIEWING INFORMATION
PROFILE AND PROGRAM SCHEDULE INFORMATION
120
105
23
ALERT BASED ON YOUR VIEWING BEHAVIOR:
INTERNATIONAL NEWS BEGINS IN 5 MINUTES
MODEM
RECEIVING UNIT
PROFILE STORAGE UNIT
INTELLIGENT AGENT
375
110
370
360
380

FIG. 8B

FIG. 9A

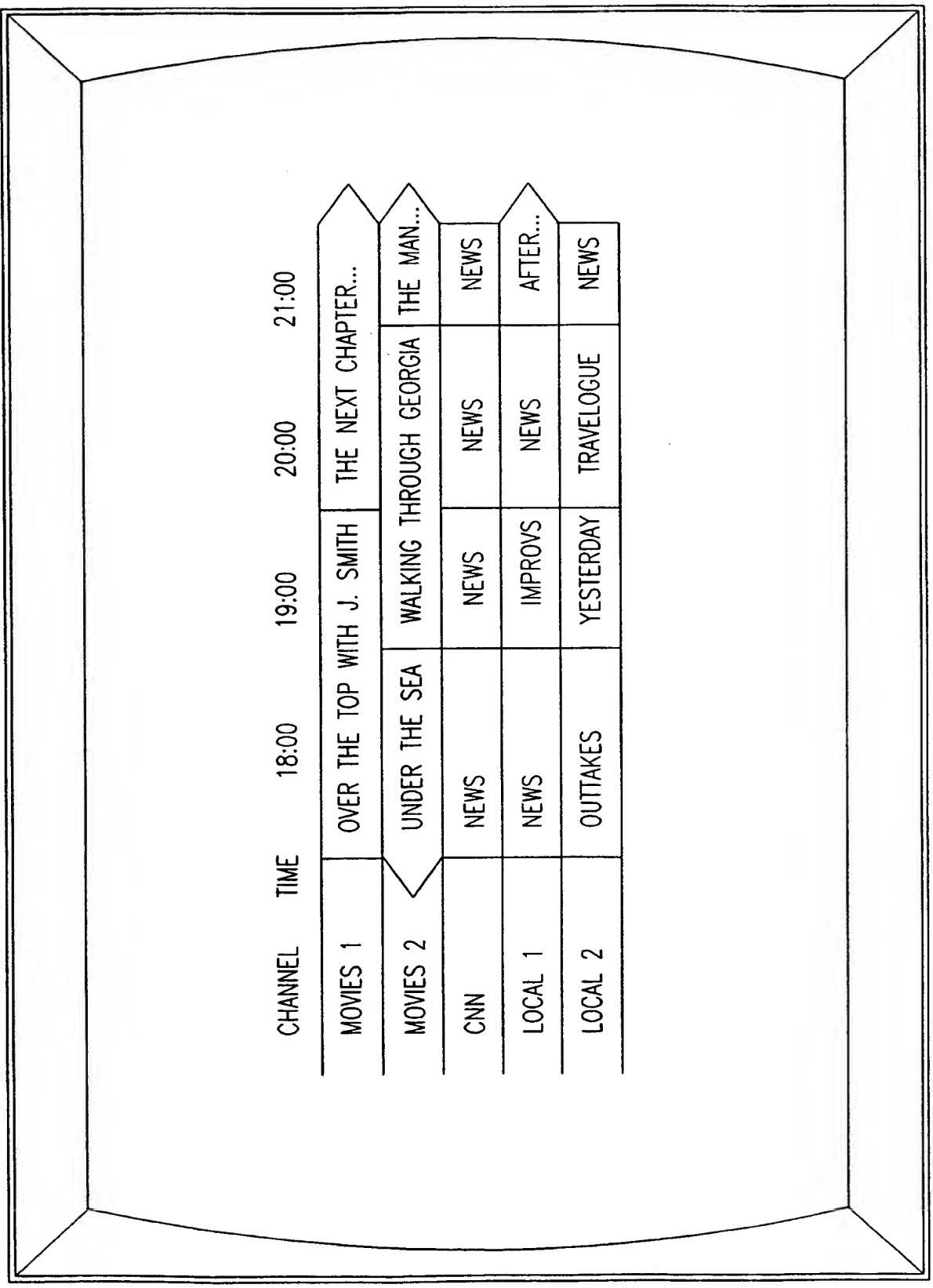

CHANNEL
TIME
18:00
19:00
20:00
21:00
MOVIES 1
OVER THE TOP WITH J. SMITH
THE NEXT CHAPTER...
MOVIES 2
UNDER THE SEA
WALKING THROUGH GEORGIA
THE MAN...
CNN
NEWS
NEWS
NEWS
LOCAL 1
NEWS
IMPROVS
NEWS
AFTER...
LOCAL 2
OUTTAKES
YESTERDAY
TRAVELOGUE
NEWS

FIG. 9B

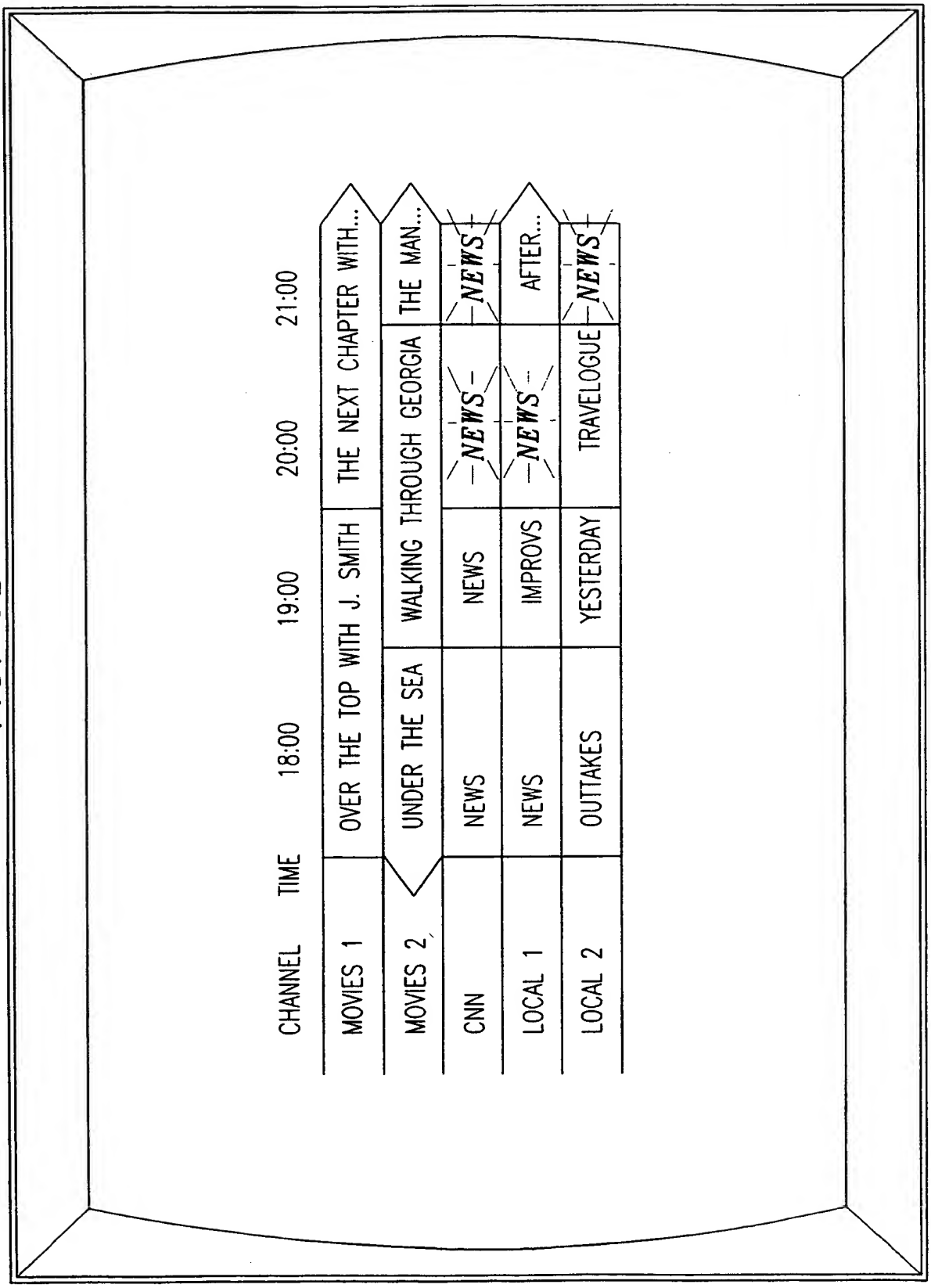
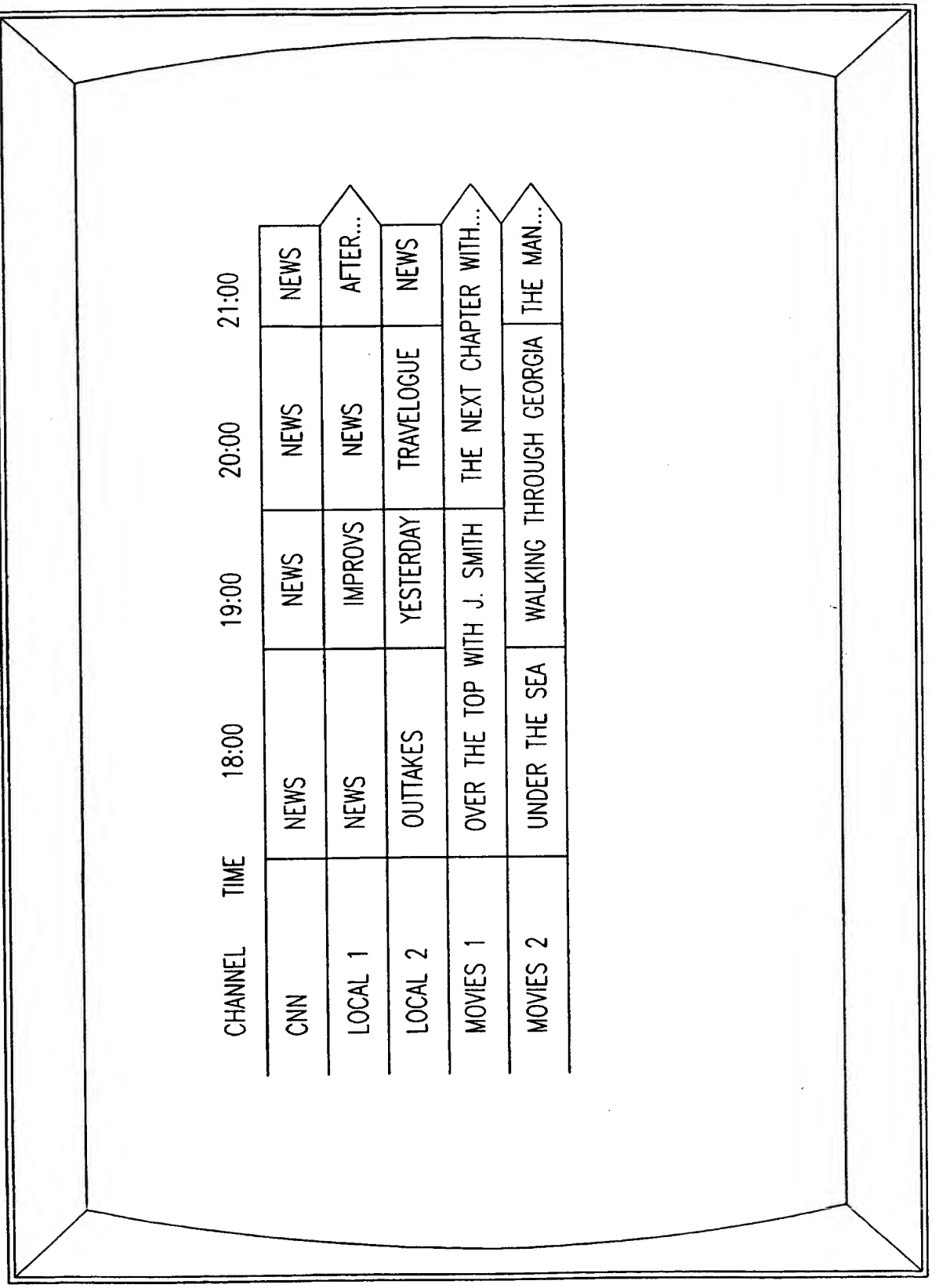

CHANNEL
TIME
18:00
19:00
20:00
21:00
MOVIES 1
OVER THE TOP WITH J. SMITH
THE NEXT CHAPTER WITH...
MOVIES 2
UNDER THE SEA
WALKING THROUGH GEORGIA
THE MAN...
CNN
NEWS
NEWS
NEWS
LOCAL 1
NEWS
IMPROVS
NEWS
AFTER...
LOCAL 2
OUTTAKES
YESTERDAY
TRAVELOGUE
NEWS

FIG. 9C



| CHANNEL | TIME | 18:00 | 19:00 | 20:00 | 21:00 |
|---|---|---|---|---|---|
| CNN | | NEWS | NEWS | NEWS | NEWS |
| LOCAL 1 | | NEWS | IMPROVS | NEWS | AFTER... |
| LOCAL 2 | | OUTTAKES | YESTERDAY | TRAVELOGUE | NEWS |
| MOVIES 1 | | OVER THE TOP WITH J. SMITH | | THE NEXT CHAPTER WITH... | |
| MOVIES 2 | | UNDER THE SEA | WALKING THROUGH GEORGIA | | THE MAN... |

FIG. 9D

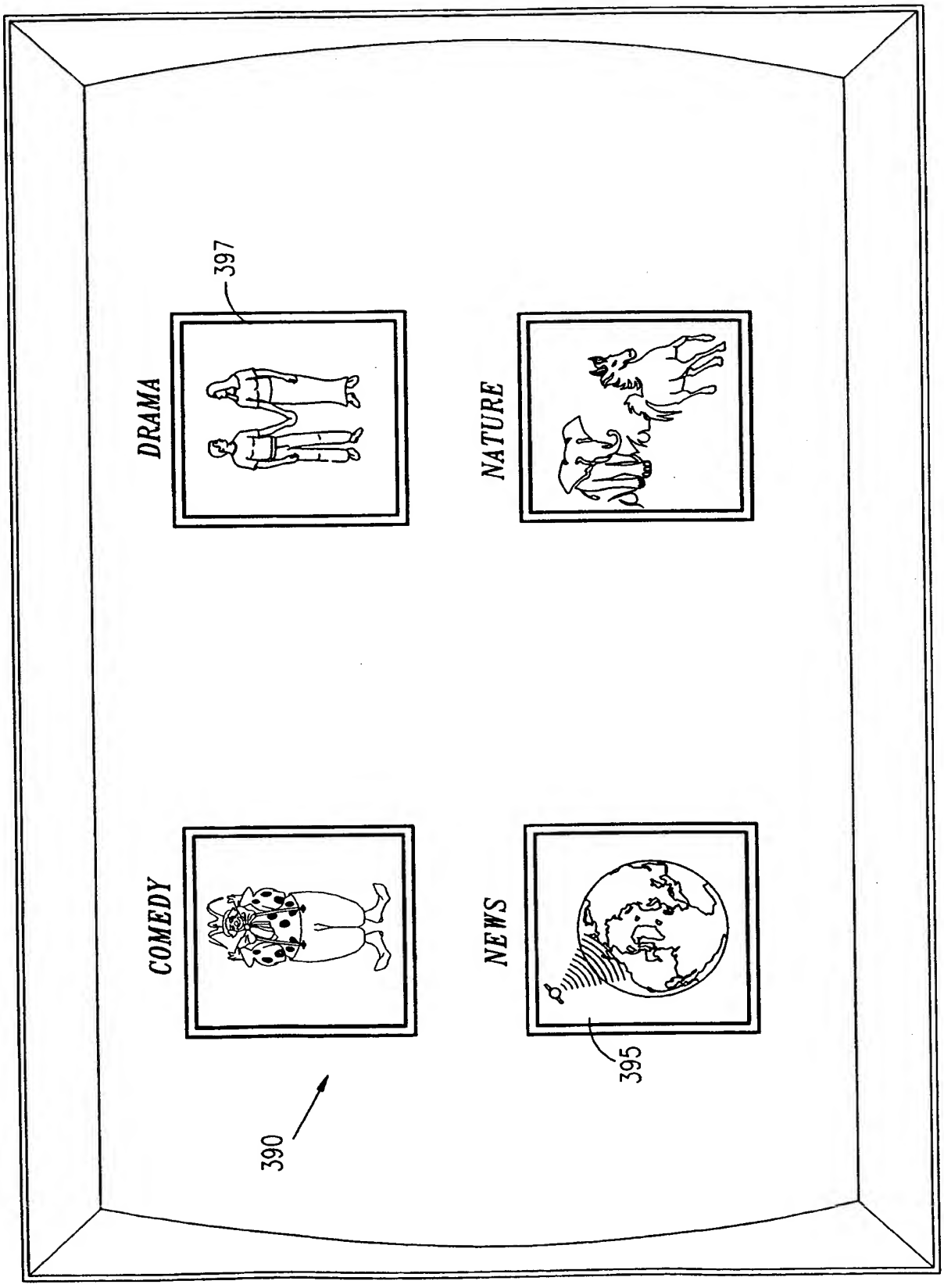


FIG. 9E

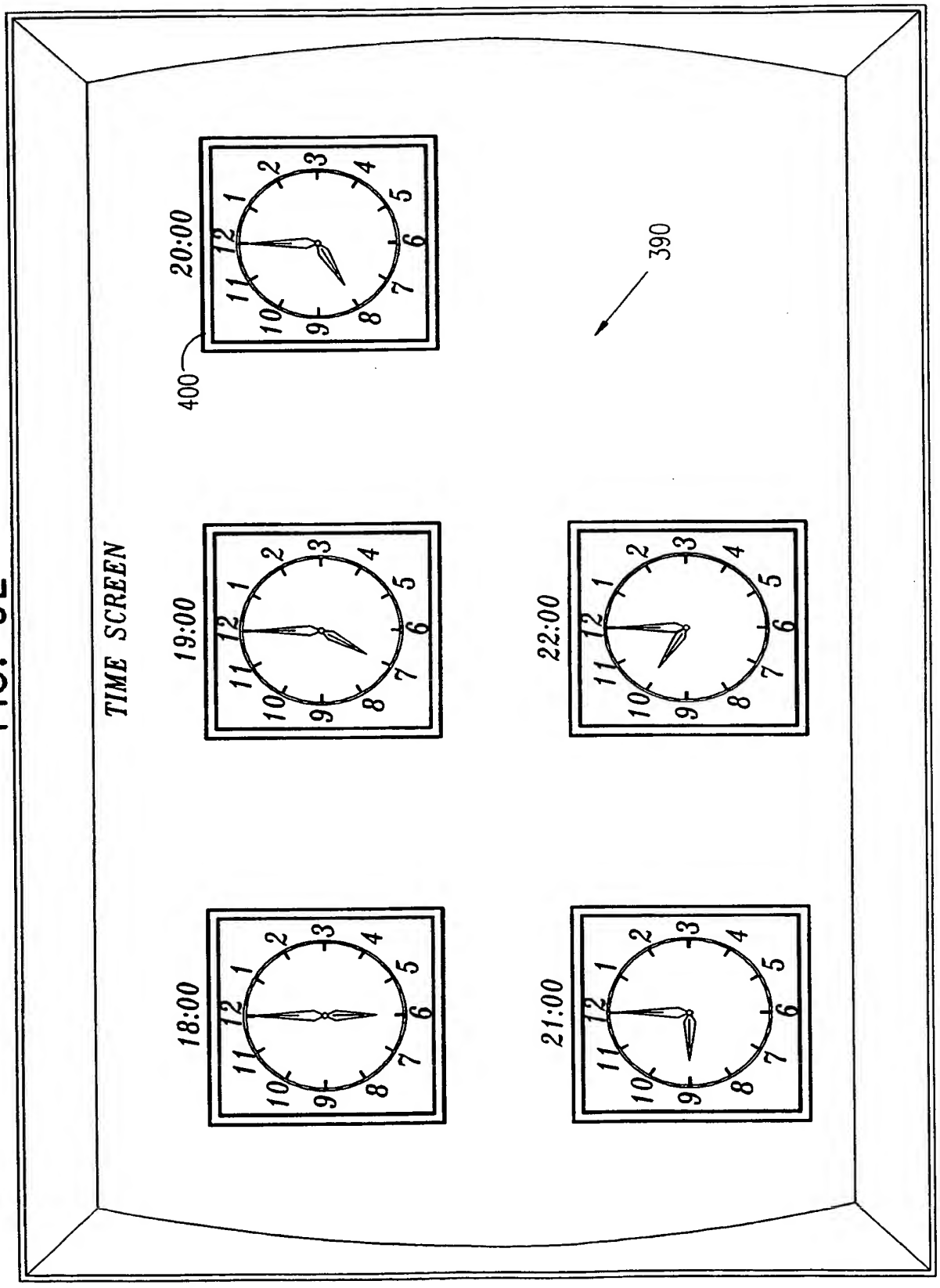


FIG. 9F

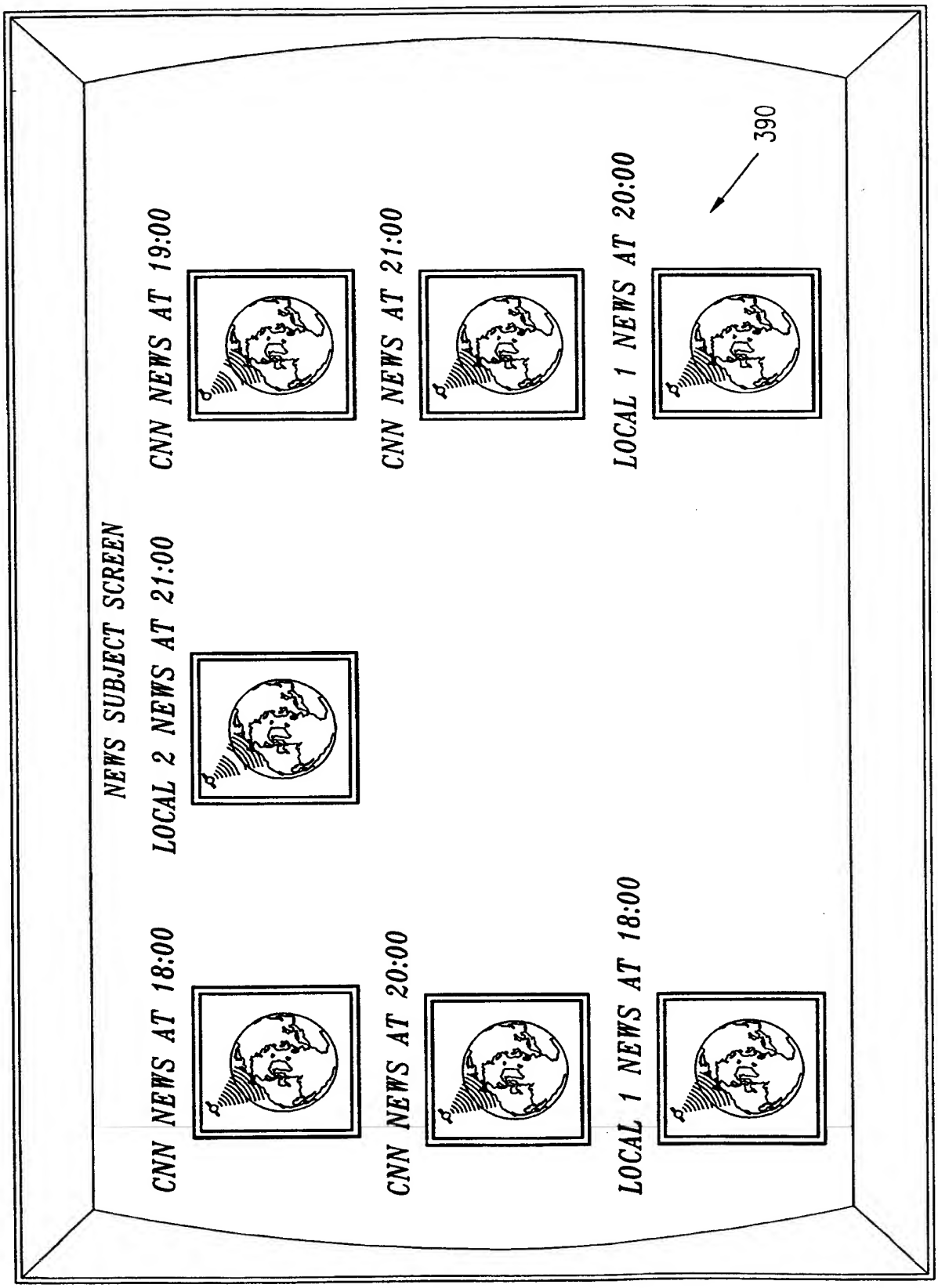

NEWS SUBJECT SCREEN
CNN NEWS AT 18:00
LOCAL 2 NEWS AT 21:00
CNN NEWS AT 19:00
CNN NEWS AT 20:00
CNN NEWS AT 21:00
LOCAL 1 NEWS AT 18:00
LOCAL 1 NEWS AT 20:00
390

FIG. 9G

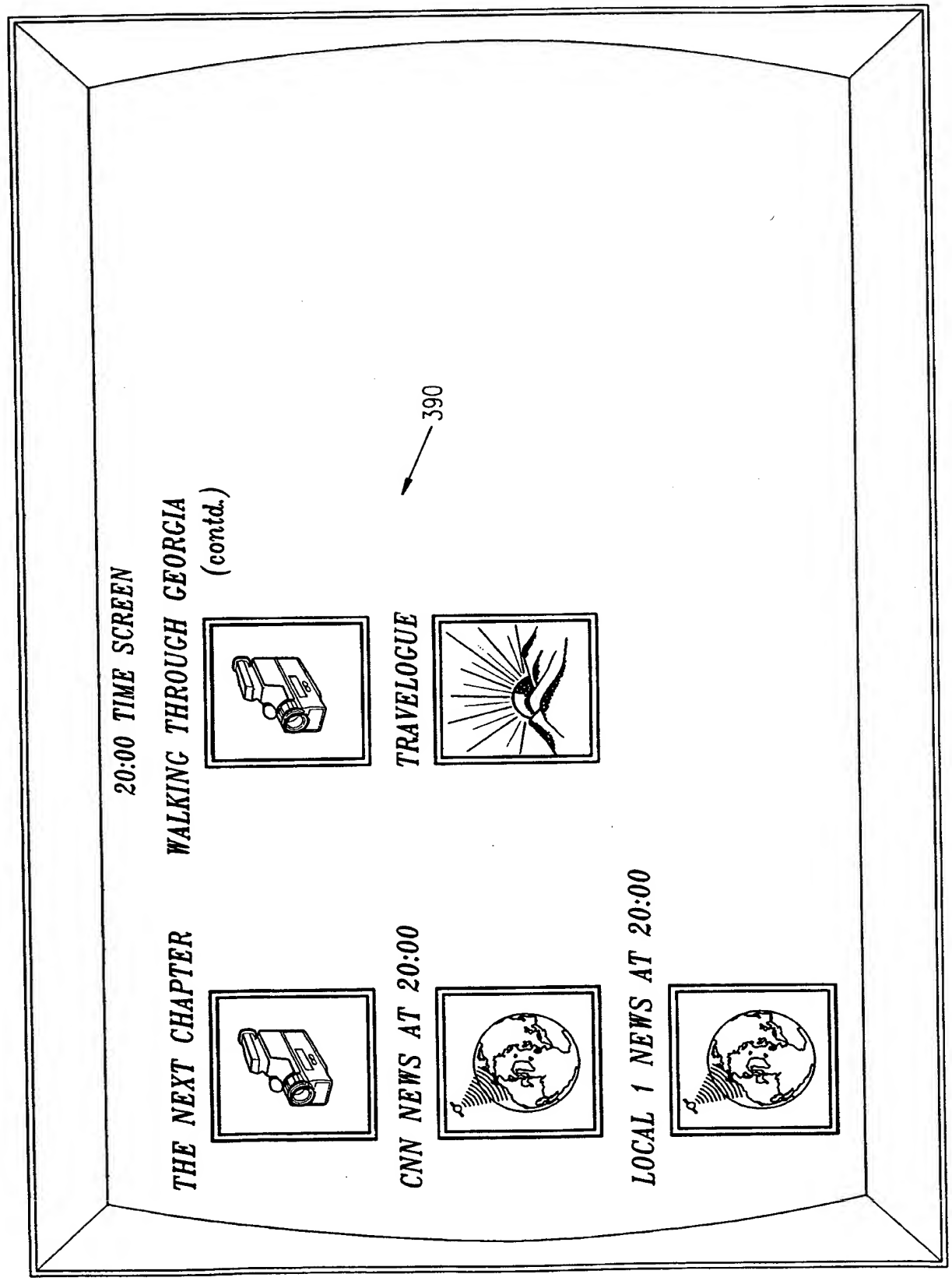

20:00 TIME SCREEN
THE NEXT CHAPTER
WALKING THROUGH GEORGIA (contd.)
CNN NEWS AT 20:00
TRAVELOGUE
LOCAL 1 NEWS AT 20:00
390

FIG. 9H

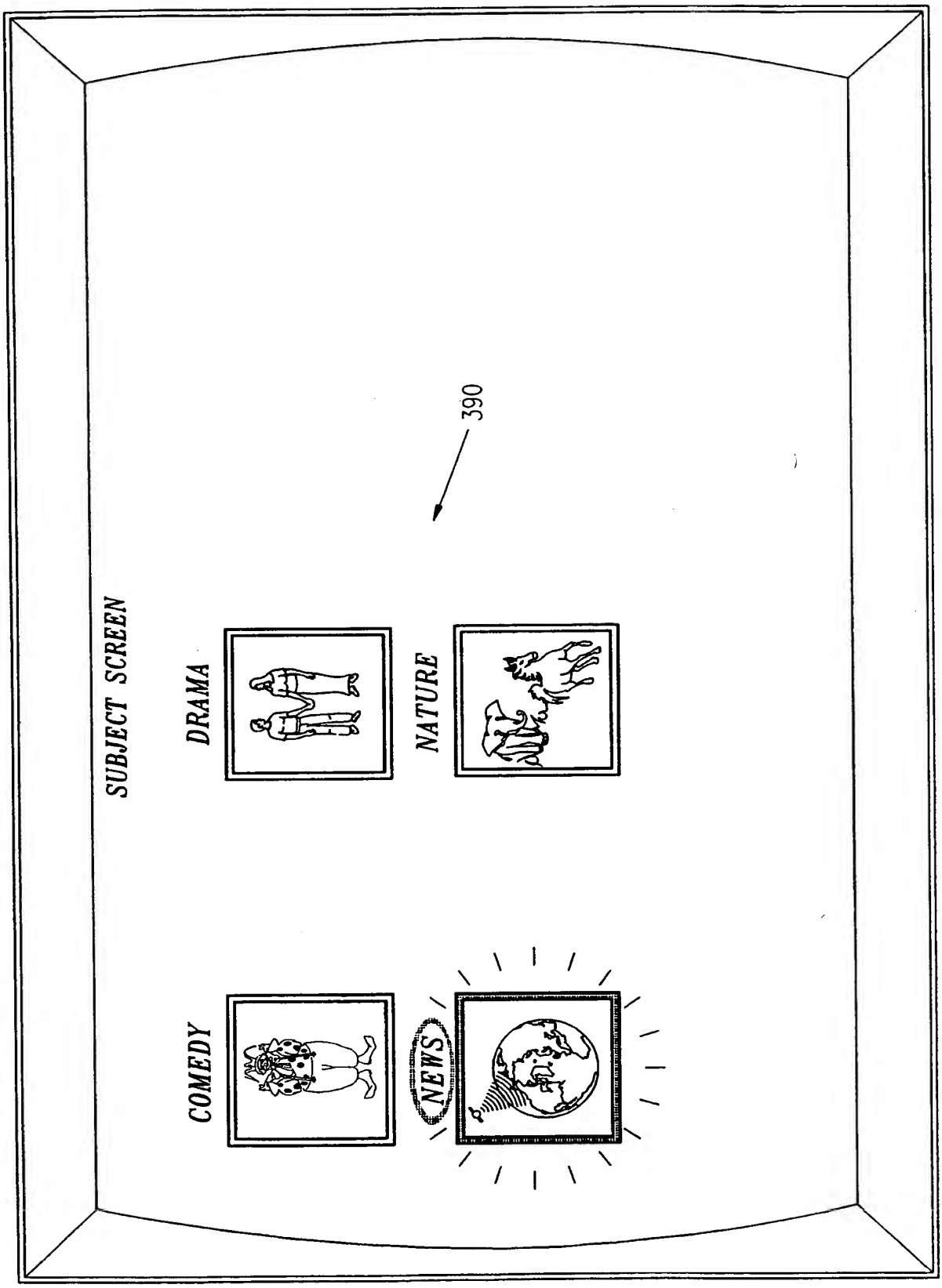


FIG. 91

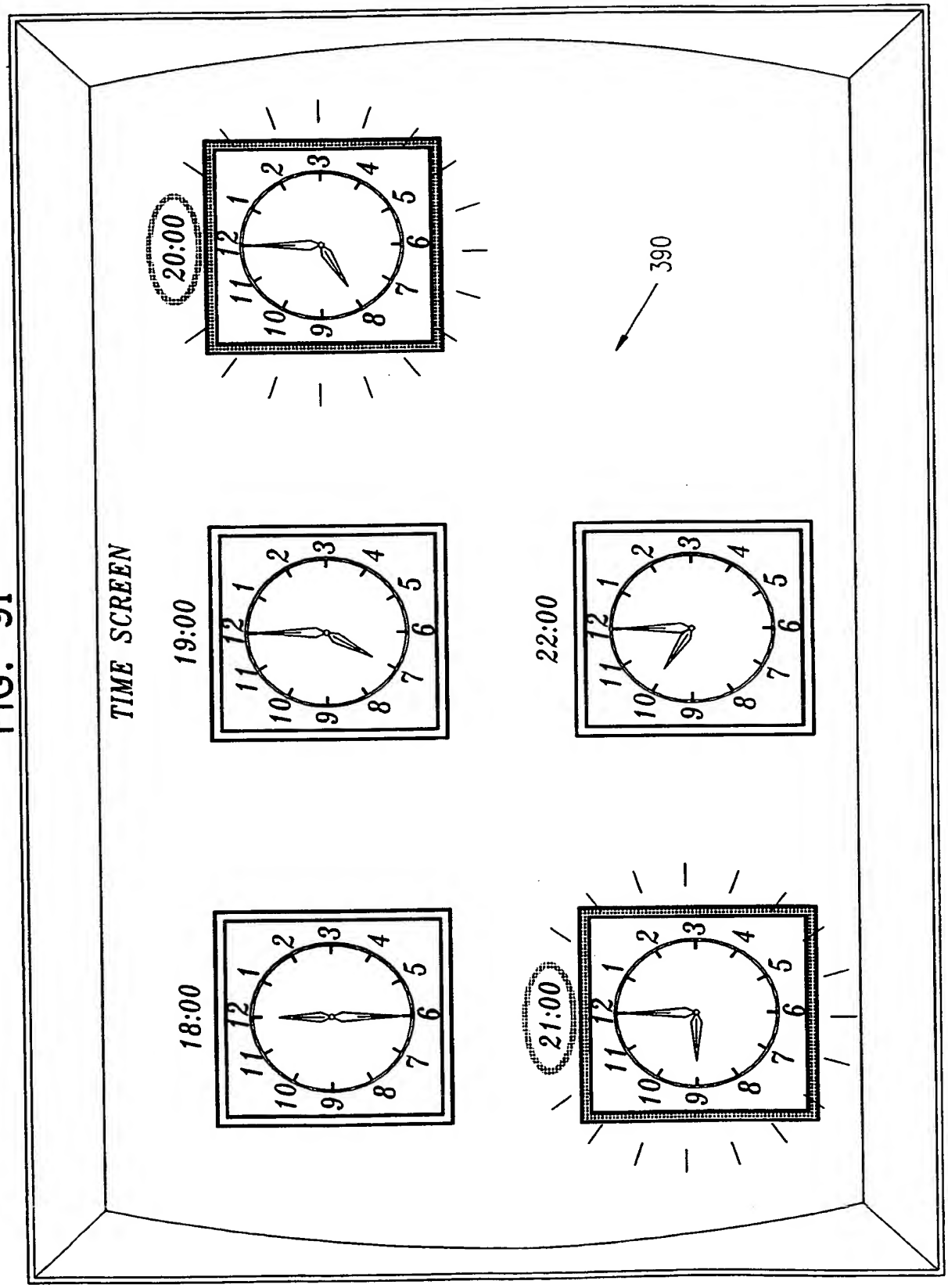


FIG. 9J

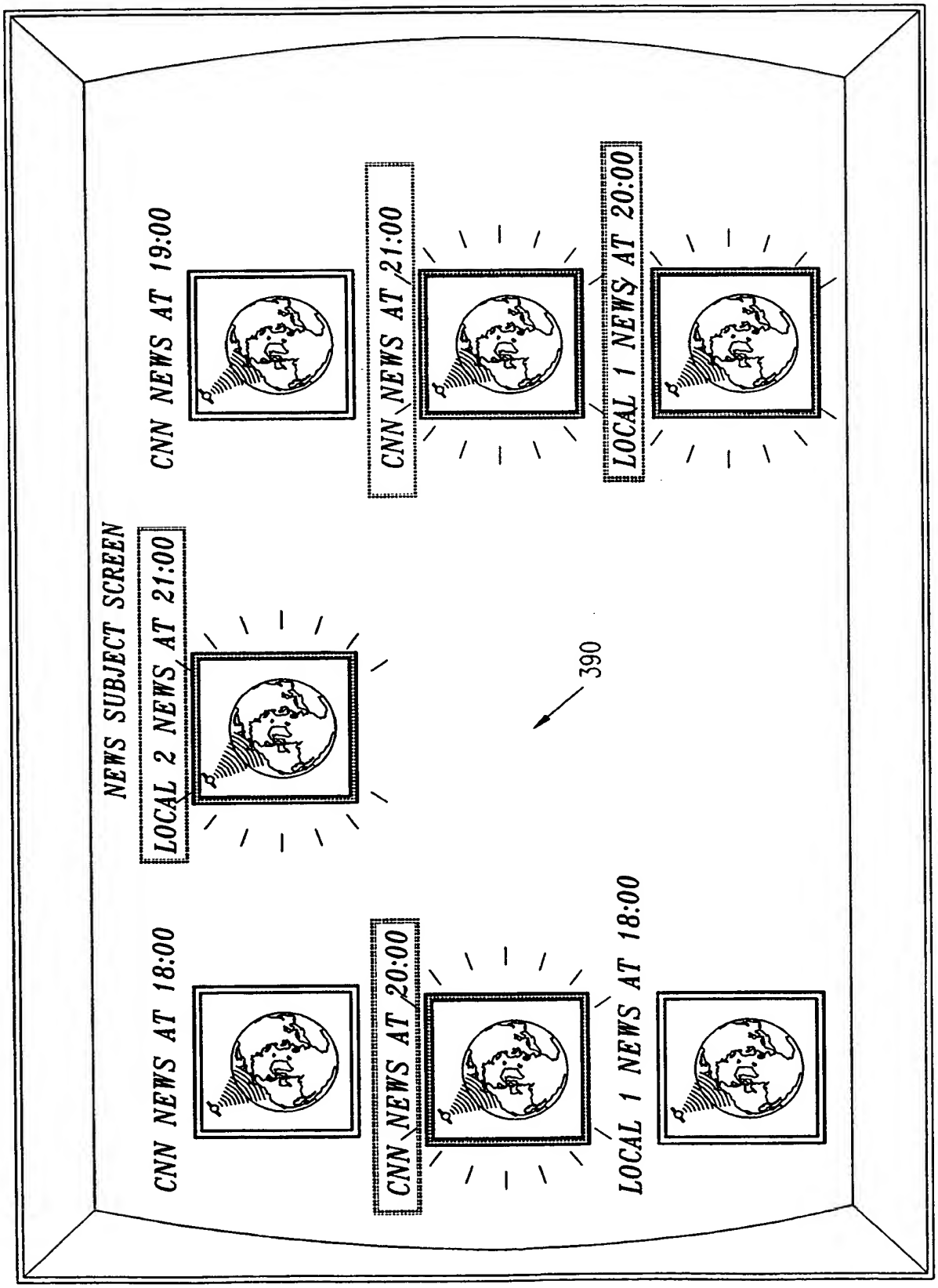

NEWS SUBJECT SCREEN
LOCAL 2 NEWS AT 21:00
CNN NEWS AT 19:00
CNN NEWS AT 21:00
LOCAL 1 NEWS AT 20:00
CNN NEWS AT 18:00
CNN NEWS AT 20:00
LOCAL 1 NEWS AT 18:00
390

FIG. 9K

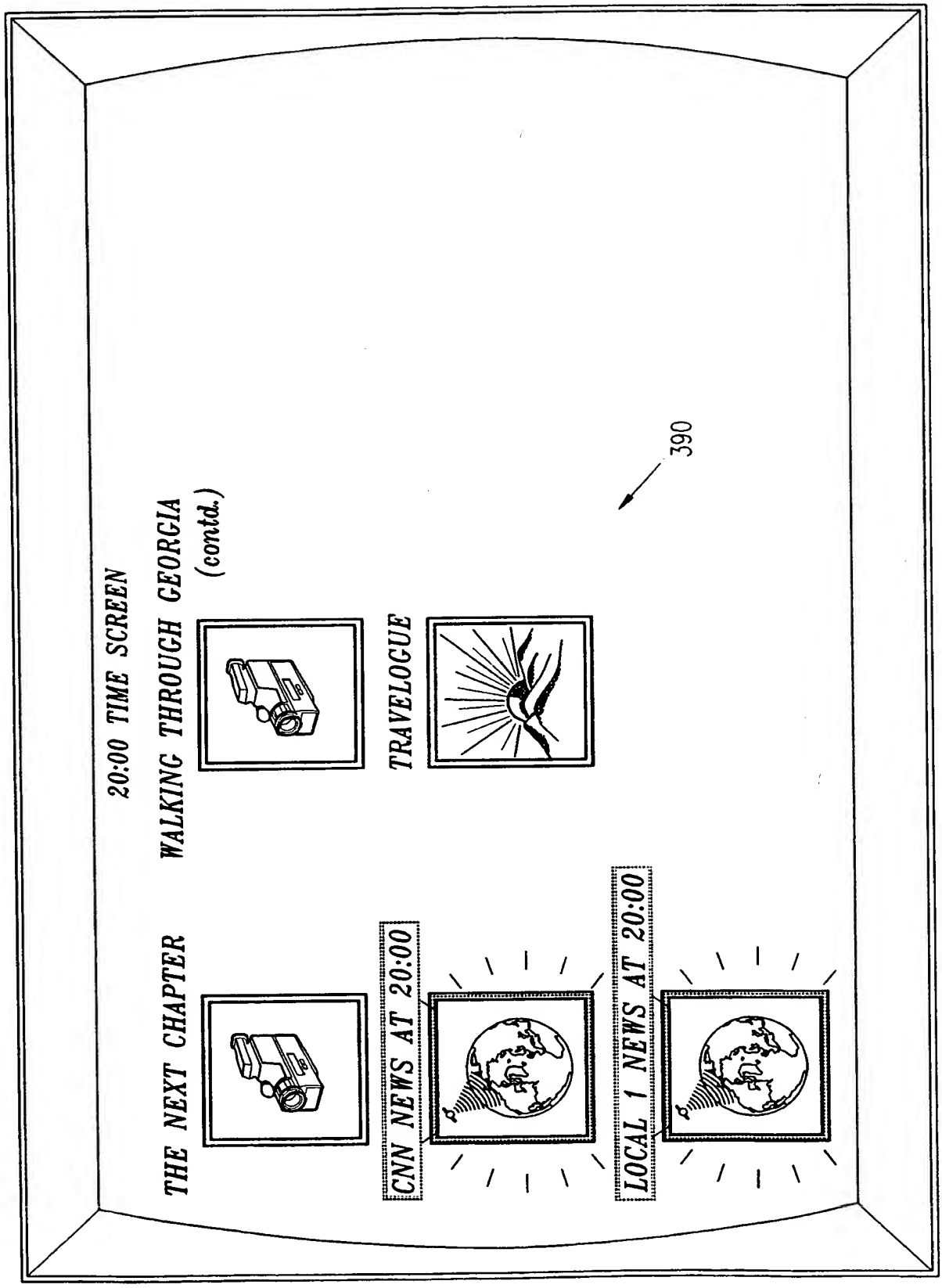
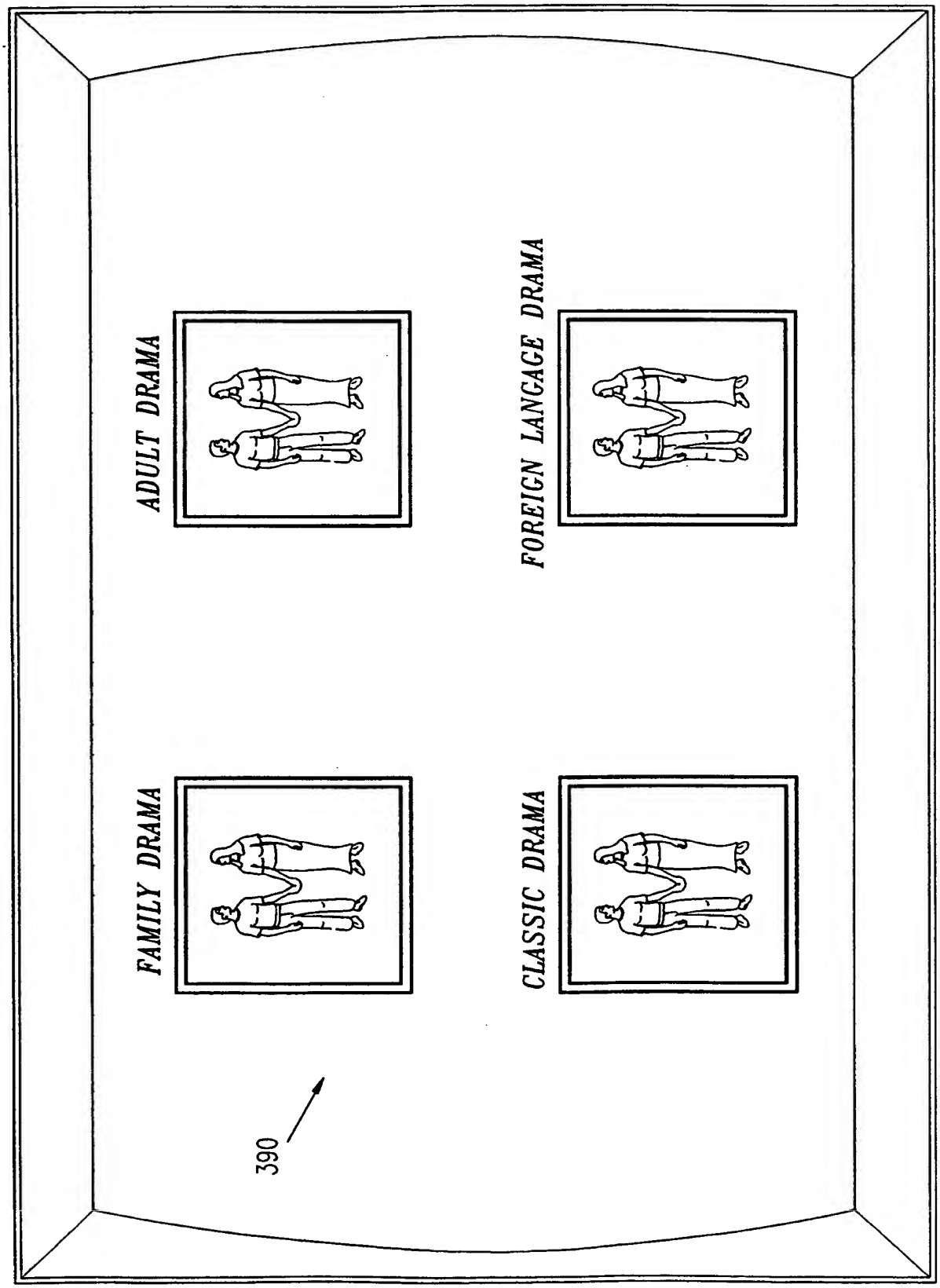

20:00 TIME SCREEN
THE NEXT CHAPTER
WALKING THROUGH GEORGIA (contd.)
TRAVELOGUE
CNN NEWS AT 20:00
LOCAL 1 NEWS AT 20:00
390

FIG. 9L


ADULT DRAMA
FOREIGN LANGAGE DRAMA
FAMILY DRAMA
CLASSIC DRAMA
390

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL98/00307

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) :H04N/173
US CL :455/2
According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 455/2,6.2,6.3,4.2,5.1; 348/1,2,3,6,7,10,12,13; H04N 7/16, 7/173

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X<br>---<br>Y | US 5,635,989 A (ROTHMULLER) 03 June 1997, see entire document. | 1-35, 39-42. 45-47, 51-52<br>---<br>36 |
| X | US 5,483,278 A (STRUBBE et al.) 09 January 1996, see entire document. | 1-35, 39-42, 45-47, 51-52 |
| X | US 5,465,113 A (GILBOY) 07 November 1995, see entire document. | 1-35, 39-42, 45-47, 51-52 |

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

| | | | |
|---|---|---|---|
| * | Special categories of cited documents: | "T" | later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| "A" | document defining the general state of the art which is not considered to be of particular relevance | "X" | document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
| "E" | earlier document published on or after the international filing date | "Y" | document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "L" | document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "&" | document member of the same patent family |
| "O" | document referring to an oral disclosure, use, exhibition or other means | | |
| "P" | document published prior to the international filing date but later than the priority date claimed | | |

| | |
|---|---|
| Date of the actual completion of the international search<br>29 SEPTEMBER 1998 | Date of mailing of the international search report<br>29 OCT 1998 |
| Name and mailing address of the ISA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, D.C. 20231<br>Facsimile No. (703) 305-3230 | Authorized officer<br>CHRISTOPHER GRANT<br>Telephone No. (703) 305-3900 |

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL98/00307

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X<br>---<br>Y | US 5,583,560 A (FLORIN et al.) 10 December 1996, see figures 28-32, 36-41, columns 17-25 . | 37,38,43<br>44,53-55<br>----------<br>36 |
| X | US 5,530,469 A (GARFINKLE) 25 June 1996, see entire document. | 48-50 |

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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :
H04N 5/445

A1

(11) International Publication Number: WO 99/14947

(43) International Publication Date: 25 March 1999 (25.03.99)

(21) International Application Number: PCT/US98/17125

(22) International Filing Date: 19 August 1998 (19.08.98)

(30) Priority Data:
08/938,028 18 September 1997 (18.09.97) US
08/987,740 9 December 1997 (09.12.97) US

(71) Applicant: PREVUE INTERNATIONAL, INC. [US/US]; 7140 South Lewis Avenue, Tulsa, OK 74136 (US).

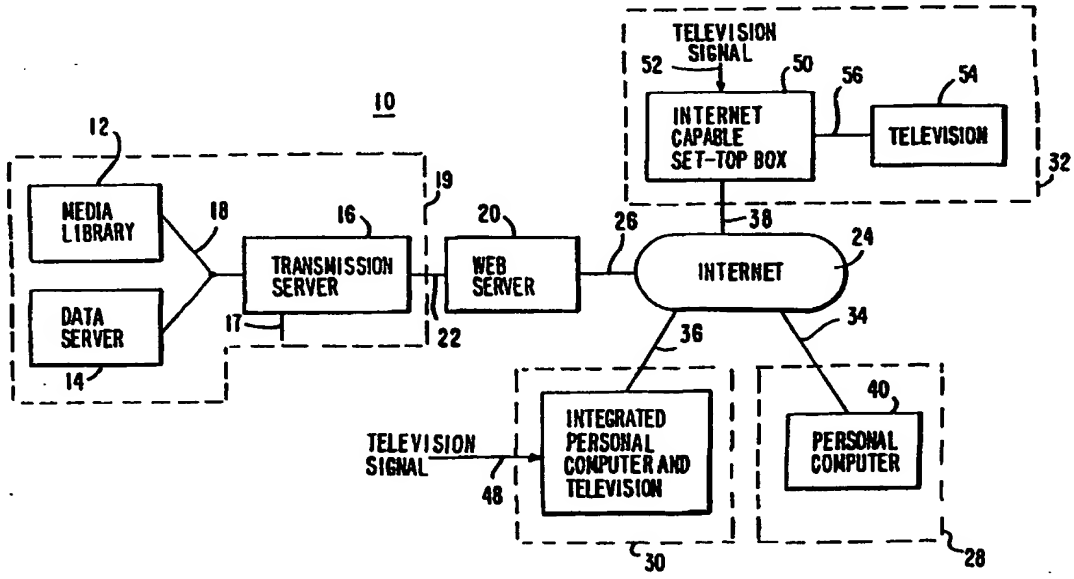
(72) Inventors: BOYER, Franklin, E.; 191 Lake Shore Drive, Cleveland, OK 74020 (US). DEMERS, Timothy, B.; 4923A S. 72 East Avenue, Tulsa, OK 74145 (US). BLACKWELL, Bruce, A.; 1801 South Butternut Avenue, Broken Arrow, OK 74012 (US).

(74) Agents: TREYZ, G., Victor et al.; Fish & Neave, 1251 Avenue of the Americas, New York, NY 10020 (US).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
*With international search report.*

(54) Title: ELECTRONIC-MAIL REMINDER FOR AN INTERNET TELEVISION PROGRAM GUIDE




(57) Abstract

An Internet television program guide electronic-mail (e-mail) reminder system is provided. The system allows a user at a multimedia system to order and receive e-mail message reminders of scheduled television events over the Internet. The user can order e-mail reminders after selecting a program from the program listings or by supplying (a program title directly) specific user program preferences without having to consult the program listings. The user can specify when and how often the reminders will be generated and received. If desired, the user can view a list of all currently requested e-mail reminders. Entries can be added to the list or the user can cancel a previously ordered reminder. The user can order e-mail reminders for scheduled pay-per-view programs using the system. The user can also have reminder information periodically updated and available directly on the user's multimedia system.

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|---|---|---|---|---|---|---|---|
| **AL** | Albania | **ES** | Spain | **LS** | Lesotho | **SI** | Slovenia |
| **AM** | Armenia | **FI** | Finland | **LT** | Lithuania | **SK** | Slovakia |
| **AT** | Austria | **FR** | France | **LU** | Luxembourg | **SN** | Senegal |
| **AU** | Australia | **GA** | Gabon | **LV** | Latvia | **SZ** | Swaziland |
| **AZ** | Azerbaijan | **GB** | United Kingdom | **MC** | Monaco | **TD** | Chad |
| **BA** | Bosnia and Herzegovina | **GE** | Georgia | **MD** | Republic of Moldova | **TG** | Togo |
| **BB** | Barbados | **GH** | Ghana | **MG** | Madagascar | **TJ** | Tajikistan |
| **BE** | Belgium | **GN** | Guinea | **MK** | The former Yugoslav Republic of Macedonia | **TM** | Turkmenistan |
| **BF** | Burkina Faso | **GR** | Greece | | | **TR** | Turkey |
| **BG** | Bulgaria | **HU** | Hungary | **ML** | Mali | **TT** | Trinidad and Tobago |
| **BJ** | Benin | **IE** | Ireland | **MN** | Mongolia | **UA** | Ukraine |
| **BR** | Brazil | **IL** | Israel | **MR** | Mauritania | **UG** | Uganda |
| **BY** | Belarus | **IS** | Iceland | **MW** | Malawi | **US** | United States of America |
| **CA** | Canada | **IT** | Italy | **MX** | Mexico | **UZ** | Uzbekistan |
| **CF** | Central African Republic | **JP** | Japan | **NE** | Niger | **VN** | Viet Nam |
| **CG** | Congo | **KE** | Kenya | **NL** | Netherlands | **YU** | Yugoslavia |
| **CH** | Switzerland | **KG** | Kyrgyzstan | **NO** | Norway | **ZW** | Zimbabwe |
| **CI** | Côte d'Ivoire | **KP** | Democratic People's Republic of Korea | **NZ** | New Zealand | | |
| **CM** | Cameroon | | | **PL** | Poland | | |
| **CN** | China | **KR** | Republic of Korea | **PT** | Portugal | | |
| **CU** | Cuba | **KZ** | Kazakstan | **RO** | Romania | | |
| **CZ** | Czech Republic | **LC** | Saint Lucia | **RU** | Russian Federation | | |
| **DE** | Germany | **LI** | Liechtenstein | **SD** | Sudan | | |
| **DK** | Denmark | **LK** | Sri Lanka | **SE** | Sweden | | |
| **EE** | Estonia | **LR** | Liberia | **SG** | Singapore | | |

# ELECTRONIC-MAIL REMINDER FOR AN INTERNET TELEVISION PROGRAM GUIDE

## Background of the Invention

This invention relates to the Internet, and more particularly, to techniques for reminding a user via electronic mail (e-mail) of scheduled television programs displayed on an Internet television program guide.

Cable, satellite, and broadcast television systems provide viewers with a large number of television channels. Viewers have traditionally had to consult preprinted television program listings to determine which programs were scheduled to be broadcast on a particular day and at a particular time. Technological advances have allowed more convenient and advanced program guide services to be developed. For example, passive television-based program guides have been developed that allow television viewers to view television program listings directly on their television sets. In addition, interactive television program guide services have been developed that allow a service provider to deliver television program listings data to a user's set-top box. An interactive program guide application in the set-top box allows the user to

display the television program listings on the user's television set. More recently, television program guide systems have been developed that provide television program listings over the Internet.

With such an Internet television program guide system, users with personal computers or integrated personal computers and televisions (PC/TVS) can obtain television program listings on-line. In addition, the users of Internet television program guides are able to view promotional video clips, interview segments, audio clips, and other multimedia material related to a given television program.

Although Internet television program guides provide users with a number of useful features, users are still faced with the problem of missing the television programs that they desire to watch because of not remembering when the program is to be broadcast on television. Users must often refer back to the program listings to determine when desired programs are to air.

It is therefore an object of the present invention to provide a way to remind users of Internet television program guides when certain television programs are to be aired.

## Summary of the Invention

This and other objects of the invention are accomplished in accordance with the principles of the present invention by providing an Internet television program guide electronic-mail (e-mail) reminder system. The system sends e-mail messages to users to remind the

users when selected television programs are to be aired.

Television program information and related data for an Internet television program guide are provided to a web server from a computer system which may be maintained by a service provider. The web server provides this information to the user's multimedia system via an Internet communications link. The user's multimedia system may include a personal computer, an integrated personal computer and television, or an Internet capable set-top box and a television.

The program information and related data are preferably provided to the user's multimedia system in the form of one or more web pages. Program guide listings may be displayed in a grid format organized in channel order from top to bottom and by broadcast time from left to right. Web browser cursors allow the user to scroll through the listings to locate programs at different times in the day or different days in the month.

If a user selects a program or pay-per-view event from the program listings, additional information related to the program or event may be displayed in a program information box. In addition to viewing further information on the program selected, the user may order an e-mail reminder message to remind the user when the selected program will be broadcast. Options are provided that allow the user to determine when and how many messages will be generated and received. Before the scheduled broadcast time of each selected

program, the system sends an e-mail message to the user that reminds the user of the program.

If desired, the user may order e-mail reminder messages without first viewing the program listings. This may be accomplished by directly entering the title of a television program for which reminders are to be ordered. This approach is useful when the user knows the program title and does not wish to consult the program listings or when the user knows the program title but does not know the location of the program in the program listings.

The user may also view a list of all currently requested e-mail reminders. Information such as the program name, type of e-mail reminder, and the date and time the request was submitted may be displayed on the list for each reminder. Entries may be added to the current reminder list as soon as the user submits a new request. In addition, the user may cancel reminder entries if the user no longer wishes to be reminded of that program.

In another aspect of the invention, e-mail reminder messages may be ordered and generated to remind a user when scheduled pay-per-view programs will be broadcast.

In yet another aspect of the invention, e-mail reminders may be ordered and generated based on other preferences which the user can specify.

Further features of the invention, its nature and various advantages will be more apparent from the accompanying drawings and the following detailed descriptions of the preferred embodiments.

Brief Description of the Drawings

FIG. 1 is a diagram of an Internet television program guide system in accordance with the present invention.

FIG. 2 is a diagram of an illustrative web page containing television program guide listings and e-mail reminder options in accordance with the present invention.

FIG. 3 is a diagram of an illustrative e-mail reminder page that allows a user to enter information for ordering e-mail reminders in accordance with the present invention.

FIG. 4 is a diagram of an illustrative program information web page that contains information on a program selected by the user and that allows the user to order an e-mail reminder in accordance with the present invention.

FIG. 5 is a diagram of an illustrative e-mail reminder page that allows the user to enter more specific information for ordering e-mail reminders in accordance with the present invention.

FIG. 6 is a diagram of an illustrative e-mail reminder message in accordance with the present invention.

FIG. 7 is a diagram of an illustrative e-mail reminder page listing all current e-mail reminder orders in accordance with the present invention.

FIG. 8 is a diagram of an illustrative e-mail reminder page that allows a user to enter a program title and to select among various options when ordering an e-mail reminder in accordance with the present invention.

FIG. 9 is a diagram of an illustrative web page that allows a user to order a pay-per-view event and an e-mail reminder in accordance with the present invention.

FIG. 10 is a site map showing options that may be selected when ordering e-mail reminder messages via an Internet television program guide in accordance with the present invention.

FIG. 11 is a diagram of an illustrative web page that allows a user to select among various preferences when ordering an e-mail reminder in accordance with the present invention.

FIG. 12 is a diagram of an illustrative e-mail reminder message in accordance with the present invention.

FIG. 13 is a diagram of an illustrative e-mail reminder page that allows the user to specify various program genres when ordering an e-mail reminder in accordance with the present invention.

FIG. 14 is a diagram of an illustrative e-mail reminder page that allows the user to enter an actor when ordering an e-mail reminder in accordance with the present invention.

FIG. 15 is a diagram of an illustrative e-mail reminder page that allows the user to enter an exact title when ordering an e-mail reminder in accordance with the present invention.

FIG. 16 is a diagram of an illustrative e-mail reminder page that allows the user to enter a partial title when ordering an e-mail reminder in accordance with the present invention.

Detailed Description of the Preferred Embodiments

An Internet television program guide system 10 in accordance with the present invention is shown in FIG. 1. Television program information is stored in media library 12 and data server 14. Media library 12 preferably contains an array of compact disc read only memory (CD-ROM) disks, digital video disks (DVDs), or other suitable media for storing multimedia content. Media library 12 contains television program clips and related interviews and reviews. The television program information stored in media library 12 is primarily video-based. Data server 14 maintains various databases of television program information. For example, data server 14 may have a remote media database containing descriptions of videos in media library 12. Data server 14 may also have a database containing information on standard titles, a pay per view database containing information regarding pay-per-view events, and a scheduling information database. Data server 14 may also have a cable system operator database containing channel lineups, information on the time zone of the operator, weather data for the operator's region, data on the zip codes in the cable system operator's area, etc. Other databases may be supported by data server 14, as desired. The television program information in data server 14 is primarily in non-video formats.

Media library 12 and data server 14 may be interconnected with transmission server 16 via internal network 18. Media library 12, data server 14, network 18, and transmission server 16 make up computer system 19. Television program information may be stored on

data server 14 in a relational database format and may be stored on transmission server 16 in an object-oriented database format. A building process may be used to periodically (e.g., once a day) build a temporary data set of television program information (e.g., a seven-day to one-month data set) for storage on transmission server 16. Transmission server 16 may receive information for the Internet television program guide service such as weather data, sports scores, etc., via data input 17.

Television program information and related data may be transferred from transmission server 16 to web server 20 via communications link 22. Communications link 22 may be part of an internal network or may be a standard dedicated communications link. Web server 20 may be connected to the Internet 24 via communications link 26. Communications link 26 is preferably a telephone line or other suitable Internet communications path.

If transmission server 16 and web server 20 are separate devices, as shown in FIG. 1, transmission server 16 can be used as a common data processing facility for other applications which use the type of television program data stored on transmission server 16. If desired, the functions of transmission server 16 and web server 20 can be integrated in a single machine. The web server configuration of FIG. 1 is illustrative only. Any other suitable web server configuration may be used if desired. For example, web servers that are located at the facilities of able system operators may be used in conjunction with or instead of web servers such as web server 20.

Web server 20 uses standard protocols such as the TCP/IP (Transmission Control Protocol/ Internet Protocol) and hypertext transfer protocol to make the television program information available over the Internet 24 to users at various multimedia systems such as multimedia systems 28, 30, and 32 via communications links 34, 36, and 38. Communications links 34, 36, and 38 are Internet links formed from telephone lines, radio-frequency (RF) links, cable modem links, satellite dish links, combinations of links such as these, or any other suitable Internet connection paths.

Multimedia system 28 has personal computer 40 with Internet access provided via Internet communications link 34.

Multimedia system 30 has an integrated personal computer and television 46, such as the Gateway 2000 Destination® PC-TV hybrid available from Gateway 2000 Inc. of North Sioux City, South Dakota. Television signals are provided at input 48. Internet access is provided via Internet communications link 36.

Multimedia system 32 has an Internet capable set-top box 50. Set-top box 50 may use the TV OnLine® set-top box application software of WorldGate Corporation, which may be implemented on set-top boxes such as the CFT-2200® of General Instrument Corporation of Hatboro, Pennsylvania and the 8600x® of Scientific Atlanta of Atlanta, Georgia. Set-top box 50 receives television signals via input 52. Internet access is provided via Internet communications link 38. Video display signals containing television and Internet information are provided to television 54 via path 56.

During operation of system 10, certain data processing functions, such as user-initiated searches and sorts, are typically performed on web server 20. If desired, such functions can be performed on a suitable data processing component in multimedia system 28, 30, or 32.

A typical Internet television program guide system display that may be provided using systems 28, 30, and 32 is shown in FIG. 2. Display 218 contains program listings 220 that are organized in channel order from top to bottom and by broadcast time from left to right. Cursors 222 and 224 may be used to navigate to earlier or later time periods, respectively. Web browser cursors 226 and 228 allow the user to scroll through the program listings. The user may also navigate through the program listings with time navigation buttons 230 to view program listings for different times in the day. Calendar buttons 232 may be used to view program listings for different days in the month. The user can choose between various available view options by selecting a desired time, channel, category, or search button from among view buttons 234.

Another component of display 218 is program information box 236. When the user has selected a program or pay-per-view event from program listings 220, additional information related to the program or event is displayed in program information box 236. For example, the user has clicked on the entry "Primal Fear" in program listings 220 of FIG. 2. As a result, the contents of program information box 236 reflects this selection. Program information box 236 typically

contains the program title (e.g., Primal Fear), the running time of the program (e.g., 2:09), a brief description of the program (e.g., A hot shot ...), and a description of the program type or genre (e.g., drama movie). If the user desires to view additional information relating to the selected program, the user may click on "closer look" icon 238 (or alternatively, on any portion of box 236), which takes the user to program information page 240 (FIG. 4). Program information page 240 allows the user to obtain additional information such as video clips and interview segments on the selected program.

Another component of program information box 236 is e-mail reminder box 235. This box is displayed concurrently with program information box 236 whenever the user has selected a program or event from program listings 220. If e-mail reminder box 235 is selected, the user is presented with an e-mail reminder page such as e-mail reminder page 410 of FIG. 3. E-mail reminder page 410 contains user-selectable options that the user may complete when ordering an e-mail reminder message to remind the user when a particular television program is to be broadcast. As defined herein, such uses of the term "broadcast" refer to the process of airing television programs by traditional television broadcast techniques, cable systems, or satellite systems.

Fields 414 and 418 of e-mail reminder page 410 allows the user to enter the name and e-mail address, respectively, of the person the e-mail reminder message is to be sent to. If desired, the user's name and e-mail address may be automatically entered in fields 414 and 418 based on information

previously provided to the system (e.g., information provided when the user registered with the Internet television program guide service).

If the user is browsing program listings from a computer located at the user's office, the user may wish to have e-mail reminders addressed to his home (i.e., using his personal Internet access account and the e-mail address for the multimedia system at home). Alternatively, the user may wish to have e-mail reminders sent to an office e-mail address. If the user has a common e-mail address for both home and the office, e-mail reminders may be accessed at either location. If desired, the system may provide more than one field 418 (e.g., field 421) so that e-mail reminders may be sent to more than one e-mail address.

E-mail reminder page 410 may provide several user-selectable options that specify when and how often the user will be reminded of the airing of selected television programs. For example, e-mail reminder page 410 may contain remind me box 424. Selecting an option in remind me box 424 allows the user to specify how often the system will generate and send a reminder message for the user. As shown in FIG. 3, the options in remind me box 424 may allow the user to be reminded of the selected program only once, each time the program is broadcast in a week, each time the program is broadcast in a month, or at some other specified time. If "other" in remind me box 424 is selected, the user is presented with page 510 shown in FIG. 5. Page 510 allows the user to specify the time period during which reminder messages will be generated and sent.

The user may specify a time period by completing box 513.

E-mail reminder page 410 of FIG. 3 may also contain how soon box 430. Selecting an option in box 430 allows the user to indicate how soon before the broadcast of the scheduled program reminder messages are to be generated and sent to the user. As shown in FIG. 3, box 430 may contain options that allow the user to be reminded 1 hour, 1 day, 2 days, or another amount of time before the selected program is broadcast. If "other" is selected in box 430, the user is presented with page 510 of FIG. 5, which allows the user to specify a desired lead time before a scheduled event by completing box 515.

Upon completing page 510 of FIG. 5, the user may submit the information that has been entered by selecting enter button 517. The user may exit page 510 without submitting the information by selecting exit button 519. If the user selects either enter button 517 or exit button 519, the user is returned to e-mail reminder page 410.

The options the user selects in boxes 424 and 430 of page 410 determine, respectively, how often and when e-mail reminder messages will be sent. For example, a user may select a program from program listings 220 (FIG. 2) that will be broadcast five times during the upcoming week. When the user selects e-mail reminder box 235 of FIG. 2, the user is then presented with e-mail reminder page 410 of FIG. 3. If the user selects the "1 hour" option in box 430 and the "each time this week" option in remind me box 424, the user will receive five e-mail reminder messages (assuming

fields 414 and 418 are completed with the user's own information) 1 hour before each broadcast of the program during that week. The messages may be sent from web server 20 to the user's multimedia system using standard e-mail techniques.

At any time during the completion of e-mail reminder screen 410 (FIG. 3), the user may cancel the e-mail reminder order by selecting cancel box 480. Selecting cancel box 480 returns the user to display 218 of FIG. 2.

Upon completing reminder screen 410, the user may submit a reminder order for processing by selecting submit box 440. Selecting submit box 440 directs the user's multimedia system 28, 30, or 32 of FIG. 1 to send the order to web server 20 (or another such suitable web server) via communications links 34, 36, or 38, Internet 24, and communications link 26. The order is processed and a reminder message is generated by web server 20 and transmitted to the user's multimedia system by e-mail at the appropriate time. Depending on the television program and user-selectable options selected, the user may request and receive one or more e-mail reminder messages.

A typical e-mail reminder message is shown in FIG. 6. The message may display the e-mail address of the person the message is being sent to (611), the name of the television program that the person is being reminded of (613), and a reminder message indicating "DON'T FORGET" along with information on when the television program is to broadcast (615). The user may delete the message by selecting delete button 618. An advertisement 620 (text, graphics, etc.) may be

included in or attached to the reminder message if desired. The advertisement may be provided using information stored in computer system 19.

Another aspect of the invention relates to managing one's reminders. If desired, e-mail reminder page 410 of FIG. 3 may contain view current reminders box 483. If view current reminders box 483 is selected, the user may be presented with current reminders page 710 of FIG. 7. Current reminders page 710 contains a list of all the user's currently requested e-mail reminders. Information such as the program name, type of e-mail reminder, and the date and time submitted may be displayed.

For example, a current reminder entry for the program "Primal Fear" may be displayed as shown in FIG. 7. This reminder was submitted by the user on November 1, 1997 at 3:03 p.m. and is set to remind the user one hour before each broadcast during the week beginning November 1, 1997. Entries may be added to the current reminder list as soon as the user submits each request (e.g., by clicking on submit button 440 from e-mail reminder page 410 of FIG. 3). If the user wishes to cancel a current reminder that the user has previously ordered, the user may highlight the desired entry on the screen with highlight region 713 and click on cancel button 712. After clicking on cancel button 712, the highlighted entry is deleted from the current reminder list and the user will no longer be reminded of the broadcasts of that program. The user may return to page 410 by clicking on exit button 714.

Another way that the user may reach e-mail reminder page 410 of FIG. 3 is by clicking on e-mail

reminder button 365 in program information page 240 of FIG. 4. Another way that the user may reach current reminders page 710 of FIG. 7 is by clicking on view current reminders button 233 in display 218 of FIG. 2.

Another component of display 218 is new reminders box 231. New reminders box 231, which may be adjacent to the program navigation controls of display 218, allows the user to order e-mail reminder messages without using program listings 220. If new reminders box 231 is selected, the user is presented with new reminders page 810 of FIG. 8. New reminders page 810 contains user-selectable options similar to the options contained in e-mail reminder page 410 of FIG. 3. For example, new reminders page 810 contains a user information box 813, a how soon box 830, and a remind me box 824. However, new reminders page 810, allows the user to enter the title of a television program for which reminders are to be ordered directly in box 818 without searching program listings 220. This is useful when the user knows the program title and does not wish to consult program listings 220 or when the user knows the program title but not know the location of the program in program listings 220.

If the user does not enter the exact title of the television program in new reminders screen 810, the data of program listings 220 or any other suitable set of television program listings data may be scanned to find the program or programs that most closely match the program title indicated by the user. If several matches are found, a list of the program matches may be presented to the user and the user may choose the actual program desired. Once the user has chosen a

program from the list, the program title in box 818 may be automatically updated.

The user may exit new reminders screen 810 at any time by clicking on exit button 880. Selecting exit button 880 will return the user to display 218 of FIG. 2.

Upon completing new reminders screen 810, the user may submit the reminder order for processing by selecting submit box 840. Selecting submit box 840 allows program guide system 10 (FIG. 1) to process the request. The request may be processed in the same way a reminder request may be processed when ordered from reminder screen 410 of FIG. 3.

The user may reach current reminders page 710 of FIG. 7 from new reminders page 810 of FIG. 8 by clicking on view current reminders button 883.

E-mail reminder messages may also be ordered and generated to remind the user of when scheduled pay-per-view programs will be broadcast. Program information page 240 of FIG. 4 contains information related to the program selected by the user on previous pages. For example, if the user has selected a pay-per-view event from program listings 220 and then selects the closer look icon 238, program information page 240 will contain more information relating to that pay-per-view event.

Program information page 240 of FIG. 4 contains program listings 366, which provide title, channel, and time and date information for the selected program. If the user has selected a pay-per-view event in order to arrive at program information page 240, program listings 366 displays additional broadcast

information for that pay-per-view program. When the user clicks on a pay-per-view entry in program listings 366, the user is taken to order page 336 (FIG. 9).

As shown in FIG. 9, order page 336 contains instructions 368 on how to order a pay-per-view event. Order page 336 also contains telephone number query box 370 and personal identification number box 372. The user may place an order for a pay-per-view event by clicking on place order button 374. Information entered by the user into boxes 370 and 372 may be used to verify the user's identity and account status. Once the user's information has been verified, the selected pay-per-view event may be delivered to the user's multimedia system.

The user may request an e-mail reminder message for the selected pay-per-view event by clicking on e-mail reminder button 377. When the user selects e-mail reminder button 377, the user is presented with e-mail reminder screen 410 of FIG. 3. After the user has completed e-mail reminder screen 410, the user may click on submit button 440 to process the request.

The way in which pay-per-view event orders are processed depends on the particular hardware used to deliver such services to the user. In system 10 of FIG. 1, web servers such as web server 20 may be located at cable system headends to receive and process pay-per-view orders submitted using order pages such as order page 336. After processing an order, the web server can direct conventional pay-per-view equipment at the cable system headend to authorize the display of the ordered pay-per-view event using set-top box 50 or a similar integrated component. Selecting pay-per-view

e-mail reminder button 377 directs user's multimedia system 32 of FIG. 1 (or a similar set-top box based system) to send the order to the Internet 24 via communications link 38. The order is then transmitted to web server 20 via communications link 26. The order may be processed and the reminder message generated by web server 20, then transmitted to the user's multimedia system 32 by e-mail. Depending on the pay-per-view event and user-selectable options selected, the user may request and receive one or more such e-mail reminder messages for pay-per-view events.

If program information page 240 of FIG. 4 details a pay-per-view event, a pay-per-view e-mail reminder message may be ordered from program information page 240 by selecting e-mail reminder button 365 (FIG. 4). Selecting e-mail reminder button 365 will again take the user to e-mail reminder page 410 of FIG. 3. There the user may place an e-mail reminder order using the same steps used for a non pay-per-view television program reminder request.

FIG. 10 is a site map showing the interrelationship of the web pages used to provide the features of the e-mail message program reminder service. The service can initially be accessed from the program guide menu page 218 (FIG. 2). When the user selects a scheduled television program, program information box 236 displays information on the selected item and displays e-mail reminder button 235. Similarly, when the user selects a scheduled pay-per-view event, program information box 236 displays information on the selected pay-per-view event and displays e-mail reminder button 235. Selecting the e-

mail reminder button from program guide menu page 218 takes the user to e-mail reminder page 410 (FIG. 3). The user, by selecting closer look icon 238 from box 236, is presented with program information page 240 (FIG. 4) which displays further information on the scheduled program or pay-per-view event. The user may also reach e-mail reminder page 410 from page 240 by selecting e-mail reminder button 365.

The user may also access e-mail reminder page 410 and order an e-mail pay-per-view event reminder by selecting e-mail reminder button 377 from pay-per-view order page 336 (FIG. 9). Pay-per-view order page 336 may be accessed from program information page 240.

E-mail reminder page 410 allows the user to submit an e-mail reminder order as well as specify the type of message desired (i.e., when and how many messages are to be sent). The user may submit an e-mail reminder order by selecting submit button 440 (FIG. 3). Once the user submits a reminder order (shown as step 890 in FIG. 10), the reminder is added to current reminders page 710 of FIG. 7. The user may also be taken to current reminders page 710 by selecting view current reminders button 483 (FIG. 3). While at current reminders page 710, the user may view all current reminders and may delete any reminder which is no longer desired. The user may also access current reminders page 710 from program guide menu page 218 by selecting view current reminders button 233 (FIG. 2).

When the user is at program guide menu page 218, selecting new reminders button 231 takes the user to new reminders page 810 (FIG. 8). While at new reminders page 810, the user may enter the desired

program title directly by completing field 818. The user may, by selecting view current reminders button 883 (FIG. 8), access current reminders page 710 or submit an order by selecting submit button 840 (FIG. 8).

In another aspect of the invention, the user may enter other e-mail reminder preferences by clicking on user preference profile button 244, as shown in FIG. 2. If user preference profile button 244 is selected, the user is presented with user preference profile page 910 of FIG. 11. User preference profile page 910 may contain clickable options 913 allowing the user to further customize e-mail reminder messages that are generated and received. This allows the user to order e-mail reminder messages without using program listings 220 of FIG. 2. For example, if the user clicks on "Genre's" from clickable options 913, the user may be presented with web page 950 of FIG. 13. Web page 950 allows the user to specify a particular genre of television programs for which reminders are to be ordered. The data of program listings 220 or any other suitable set of television program listings data may then be scanned to find the programs having that genre. Similarly, the user may click on "Actor's", "Exact Title's", or "Partial Titles" from clickable options 913 whereby the user may be presented with web pages shown in FIGS. 14, 15, and 16, respectively. The user may specify additional preferences to further customize the e-mail reminder message that is generated and received. Also the user may specify a lead time and time period during which reminder messages will be generated and received.

A typical customized e-mail reminder message is shown in FIG. 12. The message may display television programs having the user preferences specified via user preference profile page 910.

In addition, the user may receive the information displayed in the customized e-mail reminder message of FIG. 12 without having to actually receive an e-mail message or actively browse the Internet. The user may (e.g., through an Internet active channel) subscribe to a service that allows the user to receive the customized reminder information and have it available on the user's multimedia system based on user information 915 and debug information 918 of FIG. 11. The user may also request that the reminder information be updated and sent to the user periodically.

The foregoing is merely illustrative of the principles of this invention and various modifications can be made by those skilled in the art without departing from the scope and spirit of the invention.

What is Claimed is:

1. An Internet television program guide e-mail reminder system for providing e-mail message reminders of scheduled television events to a user at a multimedia system over the Internet comprising:

means for providing television program listings over the Internet;

means for selecting a television program from the television program listings provided over the Internet; and

means for providing e-mail reminders to the multimedia system over the Internet that remind the user when the television program is to be broadcast.

2. The system defined in claim 1 further comprising means for providing an e-mail reminder option which the user selects to order e-mail reminders.

3. The system defined in claim 2 wherein the means for providing the e-mail reminder option further comprises means for presenting an e-mail reminder web page when the user selects the e-mail reminder option.

4. The system defined in claim 3 wherein the means for presenting the e-mail reminder web page further comprises means for providing selectable options displayed on the e-mail reminder web page when the user is presented with the e-mail reminder web page.

5. The system defined in claim 4 wherein the selectable option is a how soon option for determining how soon before the broadcast of the television program the e-mail reminder message is to be generated and sent to the user.

6. The system defined in claim 5 wherein the how soon option further comprises means for presenting a how soon web page.

7. The system defined in claim 4 wherein the selectable option is a how often option for determining how often the e-mail reminder message is to be generated and sent to the user.

8. The system defined in claim 7 wherein the how often option further comprises means for presenting a how often web page.

9. The system defined in claim 1 further comprising means for providing a view current reminders option which the user selects to receive a list of current e-mail reminder orders.

10. The system defined in claim 9 wherein the means for providing the view current reminders option further comprises means for presenting a view current reminders web page when the user selects the view current reminders option.

11. The system defined in claim 1 further comprising means for providing a new reminders option

which the user selects to order an e-mail reminder message by entering a program title.

12. The system defined in claim 11 wherein the means for providing the new reminders option further comprises means for presenting a new reminders web page when the user selects the new reminders option.

13. The system defined in claim 12 wherein the means for presenting the new reminders web page further comprises means for providing selectable options displayed on the new reminders web page when the user is presented with the new reminders web page.

14. The system defined in claim 13 wherein the selectable option is a how soon option for determining how soon before the broadcast of the television program the e-mail reminder message is to be generated and sent to the user.

15. The system defined in claim 14 wherein the how soon option further comprises means for presenting a how soon web page.

16. The system defined in claim 13 wherein the selectable option is a how often option for determining how often the e-mail reminder message is to be generated and sent to the user.

17. The system defined in claim 16 wherein the how often option further comprises means for presenting a how often web page.

18. The system defined in claim 1 further comprising means for providing a pay-per-view order web page.

19. The system defined in claim 18 wherein the means for providing the pay-per-view order web page further comprises means for providing an e-mail reminder option which the user selects to order an e-mail reminder message.

20. A method for providing e-mail message reminders of scheduled television events to a user at a multimedia system over the Internet using an Internet television program guide system, the method comprising the steps of:

providing television program listings over the Internet;

selecting a television program from the television program listings provided over the Internet; and

providing e-mail reminders to the multimedia system over the Internet that remind the user when the television program is to be broadcast.

21. The method defined in claim 20 further comprising the step of providing an e-mail reminder option which the user selects to order e-mail reminders.

22. The method defined in claim 21 wherein the step of providing the e-mail reminder option further comprises the step of presenting an e-mail reminder web page when the user selects the e-mail reminder option.

23. The method defined in claim 22 wherein the step of presenting the e-mail reminder web page further comprises the step of providing selectable options displayed on the e-mail reminder web page when the user is presented with the e-mail reminder web page.

24. The method defined in claim 23 wherein the selectable option is a how soon option for determining how soon before the broadcast of the television program the e-mail reminder message is to be generated and sent to the user.

25. The method defined in claim 24 wherein the how soon option further comprises the step of presenting a how soon web page.

26. The method defined in claim 23 wherein the selectable option is a how often option for determining how often the e-mail reminder message is to be generated and sent to the user.

27. The method defined in claim 26 wherein the how often option further comprises the step of presenting a how often web page.

28. The method defined in claim 20 further comprising the step of providing a view current reminders option which the user selects to receive a list of current e-mail reminder orders.

29. The method defined in claim 28 wherein the step of providing the view current reminders option further comprises the step of presenting a view current reminders web page when the user selects the view current reminders option.

30. The method defined in claim 20 further comprising the step of providing a new reminders option which the user selects to order an e-mail reminder message by entering a program title.

31. The method defined in claim 30 wherein the step of providing the new reminders option further comprises the step of presenting a new reminders web page when the user selects the new reminders option.

32. The method defined in claim 31 wherein the step of presenting the new reminders web page further comprises the step of providing selectable options displayed on the new reminders web page when the user is presented with the new reminders web page.

33. The method defined in claim 32 wherein the selectable option is a how soon option for determining how soon before the broadcast of the television program the e-mail reminder message is to be generated and sent to the user.

34. The method defined in claim 33 wherein the how soon option further comprises the step of presenting a how soon web page.

35. The method defined in claim 32 wherein the selectable option is a how often option for determining how often the e-mail reminder message is to be generated and sent to the user.

36. The method defined in claim 35 wherein the how often option further comprises the step of presenting a how often web page.

37. The method defined in claim 20 further comprising the step of providing a pay-per-view order web page.

38. The method defined in claim 37 wherein the step of providing the pay-per-view order web page further comprises the step of providing an e-mail reminder option which the user selects to order an e-mail reminder message.

39. The system defined in claim 1 further comprising means for providing a user preference profile option which the user selects to order an e-mail reminder message by selecting from various e-mail reminder preferences.

40. The system defined in claim 39 wherein the means for providing the user preference profile option further comprises means for presenting a user

preference profile web page when the user selects the user preference profile option.

41. The system defined in claim 40 wherein the means for presenting the user preference profile web page further comprises means for providing selectable options displayed on the user preference profile web page when the user is presented with the user preference profile web page.

42. The system defined in claim 41 wherein the selectable option is a genre option which the user selects to order an e-mail reminder message by entering a program genre.

43. The system defined in claim 42 wherein the genre option further comprises means for presenting a genre web page when the user selects the genre option.

44. The system defined in claim 41 wherein the selectable option is an actor option which the user selects to order an e-mail reminder message by entering an actor's name.

45. The system defined in claim 44 wherein the actor option further comprises means for presenting an actor web page when the user selects the actor option.

46. The system defined in claim 41 wherein the selectable option is an exact title option which

the user selects to order an e-mail reminder message by entering an exact program title.

47. The system defined in claim 46 wherein the exact title option further comprises means for presenting an exact title web page when the user selects the exact title option.

48. The system defined in claim 41 wherein the selectable option is a partial title option which the user selects to order an e-mail reminder message by entering a partial program title.

49. The system defined in claim 48 wherein the partial program title option further comprises means for presenting a partial title web page when the user selects the partial title option.

50. The method defined in claim 20 further comprising the step of providing a user preference profile option which the user selects to order an e-mail reminder message by selecting from various e-mail reminder preferences.

51. The method defined in claim 50 wherein the step of providing the user preference profile option further comprises the step of presenting a user preference profile web page when the user selects the user preference profile option.

52. The method defined in claim 51 wherein the step of presenting the user preference profile web

page further comprises the step of providing selectable options displayed on the user preference profile web page when the user is presented with the user preference profile web page.

53. The method defined in claim 52 wherein the selectable option is a genre option which the user selects to order an e-mail reminder message by entering a program genre.

54. The method defined in claim 53 wherein the genre option further comprises the step of presenting a genre web page when the user selects the genre option.

55. The method defined in claim 52 wherein the selectable option is an actor option which the user selects to order an e-mail reminder message by entering an actor's name.

56. The method defined in claim 55 wherein the actor option further comprises the step of presenting an actor web page when the user selects the actor option.

57. The method defined in claim 52 wherein the selectable option is an exact title option which the user selects to order an e-mail reminder message by entering an exact program title.

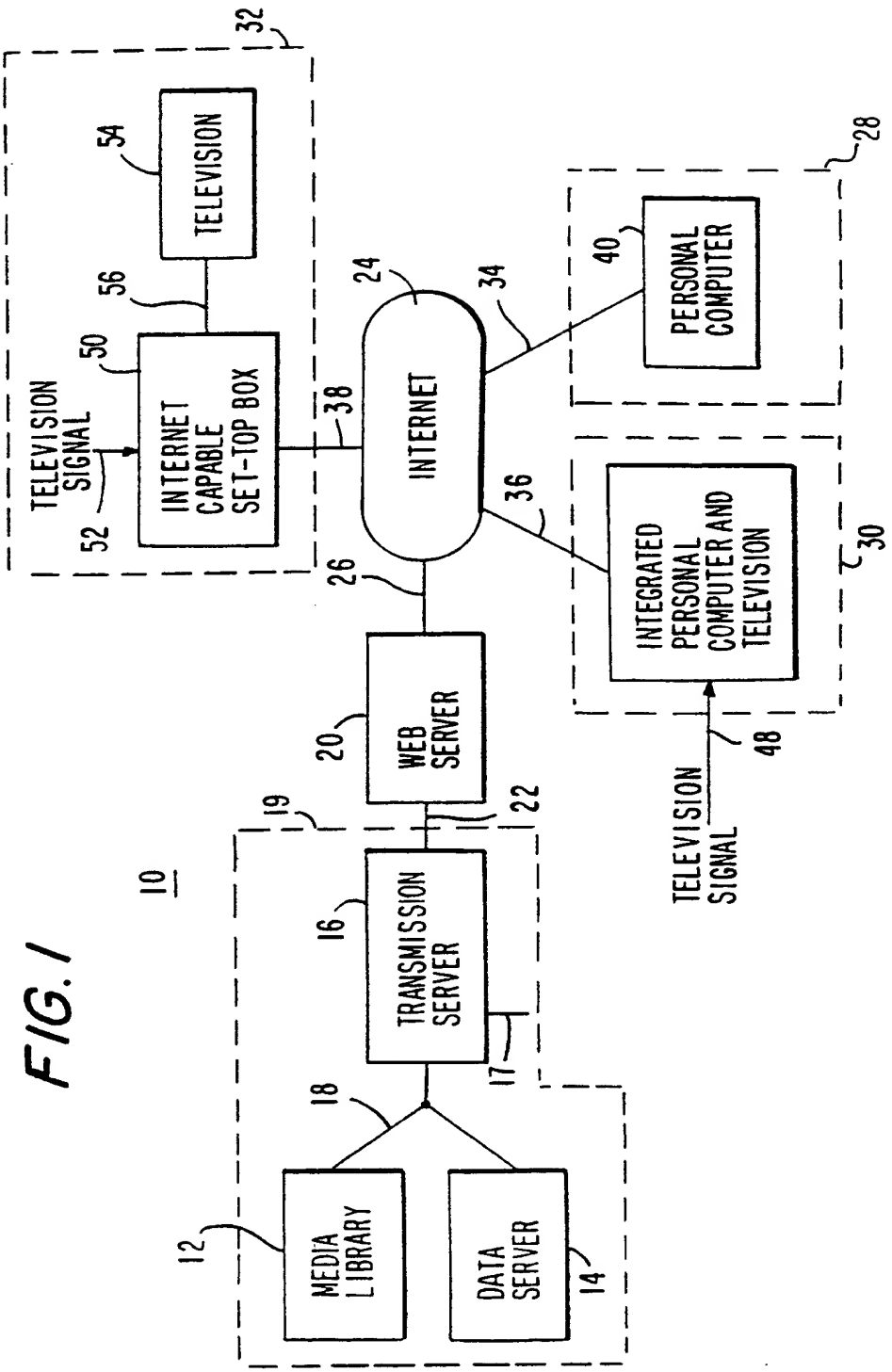
58. The method defined in claim 57 wherein the exact title option further comprises the step of

presenting an exact title web page when the user selects the exact title option.

59. The method defined in claim 52 wherein the selectable option is a partial title option which the user selects to order an e-mail reminder message by entering a partial program title.

60. The method defined in claim 59 wherein the partial title option further comprises means for presenting a partial title web page when the user selects the partial title option.

FIG. 1


10
12
MEDIA LIBRARY
14
DATA SERVER
16
TRANSMISSION SERVER
17
18
19
20
WEB SERVER
22
24
INTERNET
26
28
30
32
34
36
38
40
PERSONAL COMPUTER
INTEGRATED PERSONAL COMPUTER AND TELEVISION
48
TELEVISION SIGNAL
50
INTERNET CAPABLE SET-TOP BOX
52
TELEVISION SIGNAL
54
TELEVISION
56

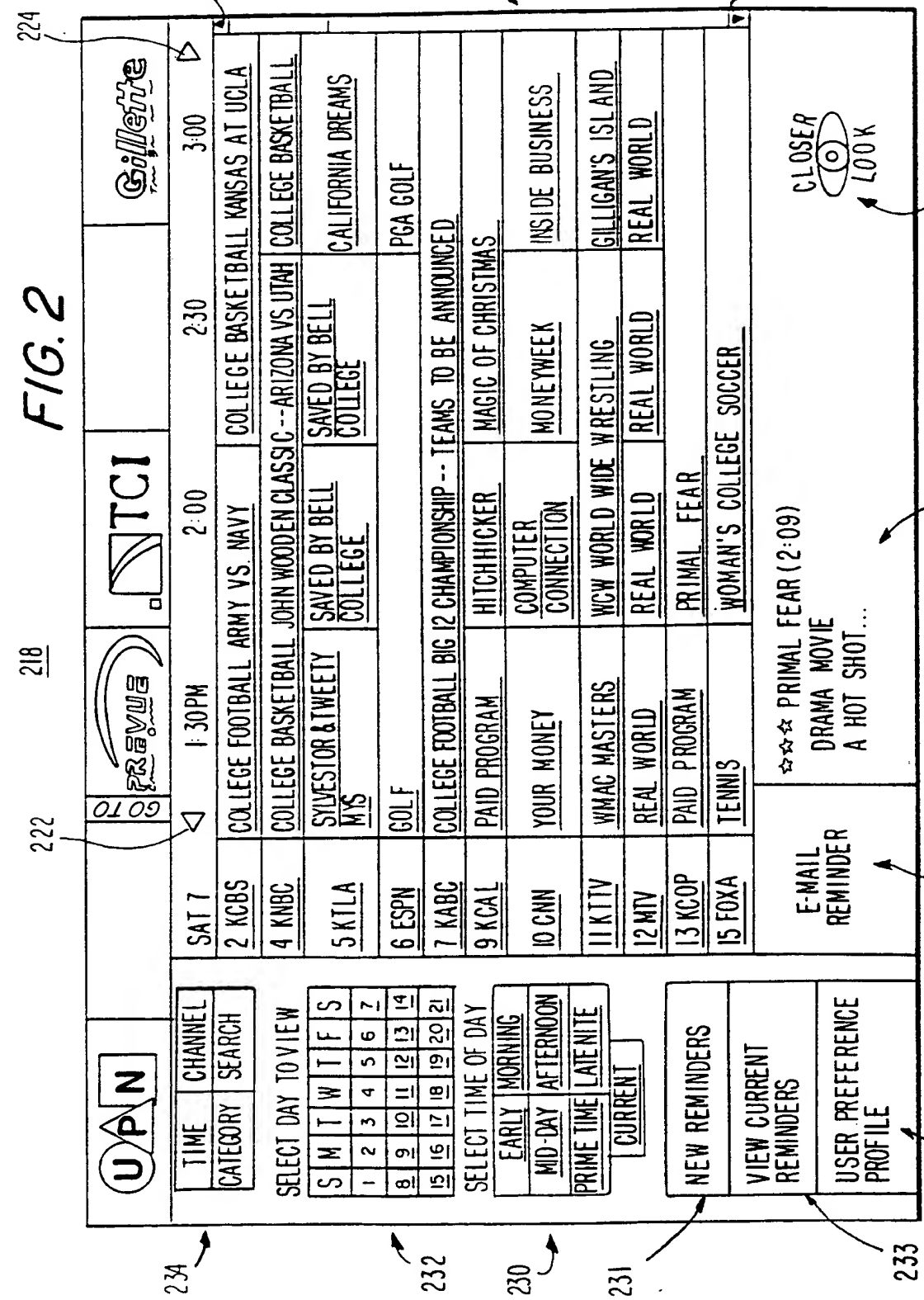


FIG. 2
218
220
222
224
226
228
230
231
232
233
234
235
236
238
UPN
REVUE
TCI
Gillette
1:30PM
2:00
2:30
3:00
SAT 7
2 KCBS
4 KNBC
5 KTLA
6 ESPN
7 KABC
9 KCAL
10 CNN
11 KTTV
12 MTV
13 KCOP
15 FOXA
COLLEGE FOOTBALL ARMY VS. NAVY
COLLEGE BASKETBALL KANSAS AT UCLA
COLLEGE BASKETBALL JOHN WOODEN CLASSIC--ARIZONA VS UTAH
COLLEGE BASKETBALL
SYLVESTOR &TWEETY MYS
SAVED BY BELL
SAVED BY BELL COLLEGE
CALIFORNIA DREAMS
GOLF
PGA GOLF
COLLEGE FOOTBALL BIG 12 CHAMPIONSHIP -- TEAMS TO BE ANNOUNCED
PAID PROGRAM
HITCHHICKER
MAGIC OF CHRISTMAS
YOUR MONEY
COMPUTER CONNECTION
MONEYWEEK
INSIDE BUSINESS
WMAC MASTERS
WCW WORLD WIDE WRESTLING
GILLIGAN'S ISLAND
REAL WORLD
REAL WORLD
REAL WORLD
REAL WORLD
PAID PROGRAM
PRIMAL FEAR
TENNIS
WOMAN'S COLLEGE SOCCER
☆☆☆ PRIMAL FEAR (2:09)
DRAMA MOVIE
A HOT SHOT...
CLOSER LOOK
TIME
CHANNEL
CATEGORY
SEARCH
SELECT DAY TO VIEW
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
SELECT TIME OF DAY
EARLY
MORNING
MID-DAY
AFTERNOON
PRIME TIME
LATE NITE
CURRENT
NEW REMINDERS
VIEW CURRENT REMINDERS
USER PREFERENCE PROFILE
E-MAIL REMINDER

FIG. 3

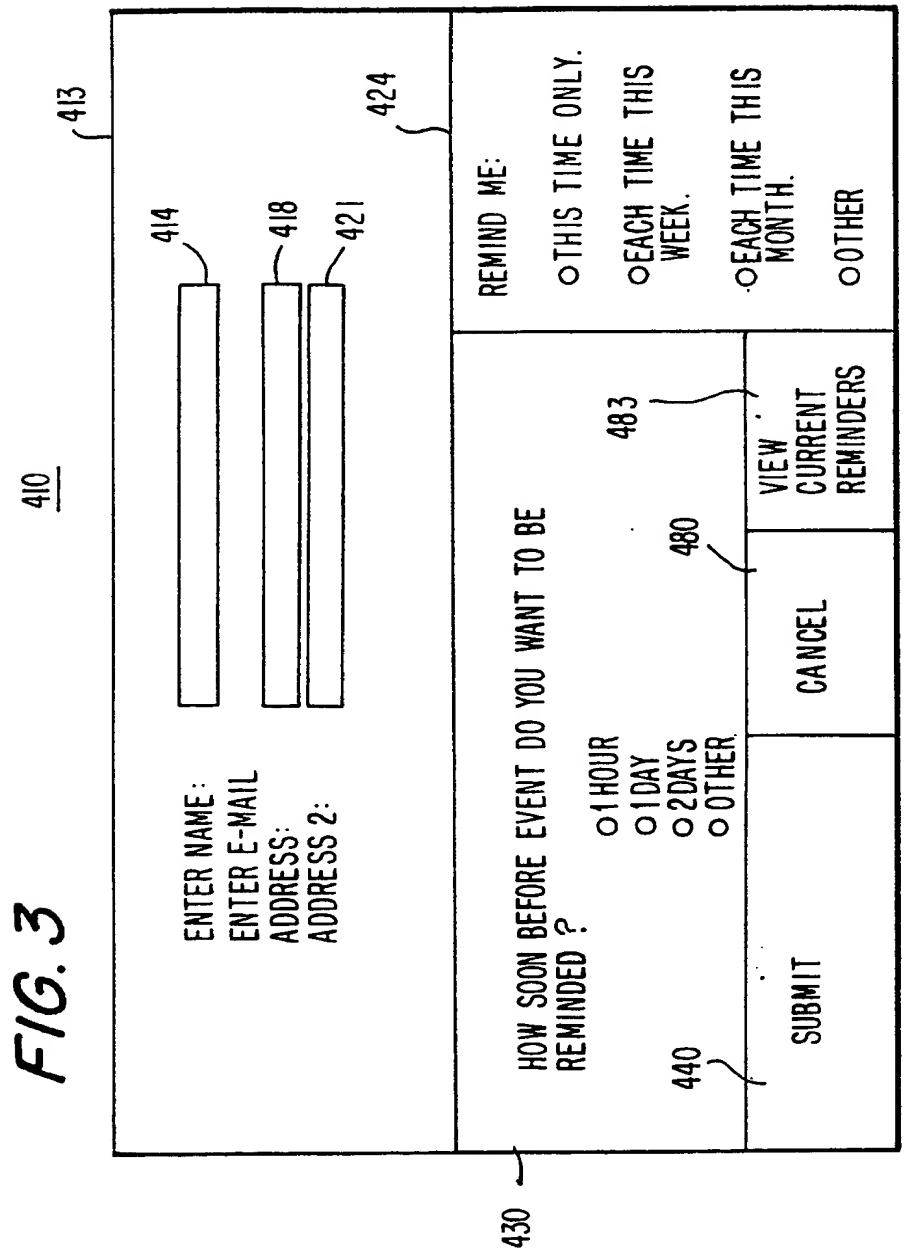

410
413
414
418
421
424
ENTER NAME:
ENTER E-MAIL ADDRESS:
ADDRESS 2:
REMIND ME:
OTHIS TIME ONLY.
OEACH TIME THIS WEEK.
OEACH TIME THIS MONTH.
OOTHER
HOW SOON BEFORE EVENT DO YOU WANT TO BE REMINDED ?
O1 HOUR
O1DAY
O2DAYS
OOTHER
483
480
440
430
SUBMIT
CANCEL
VIEW CURRENT REMINDERS

FIG. 4

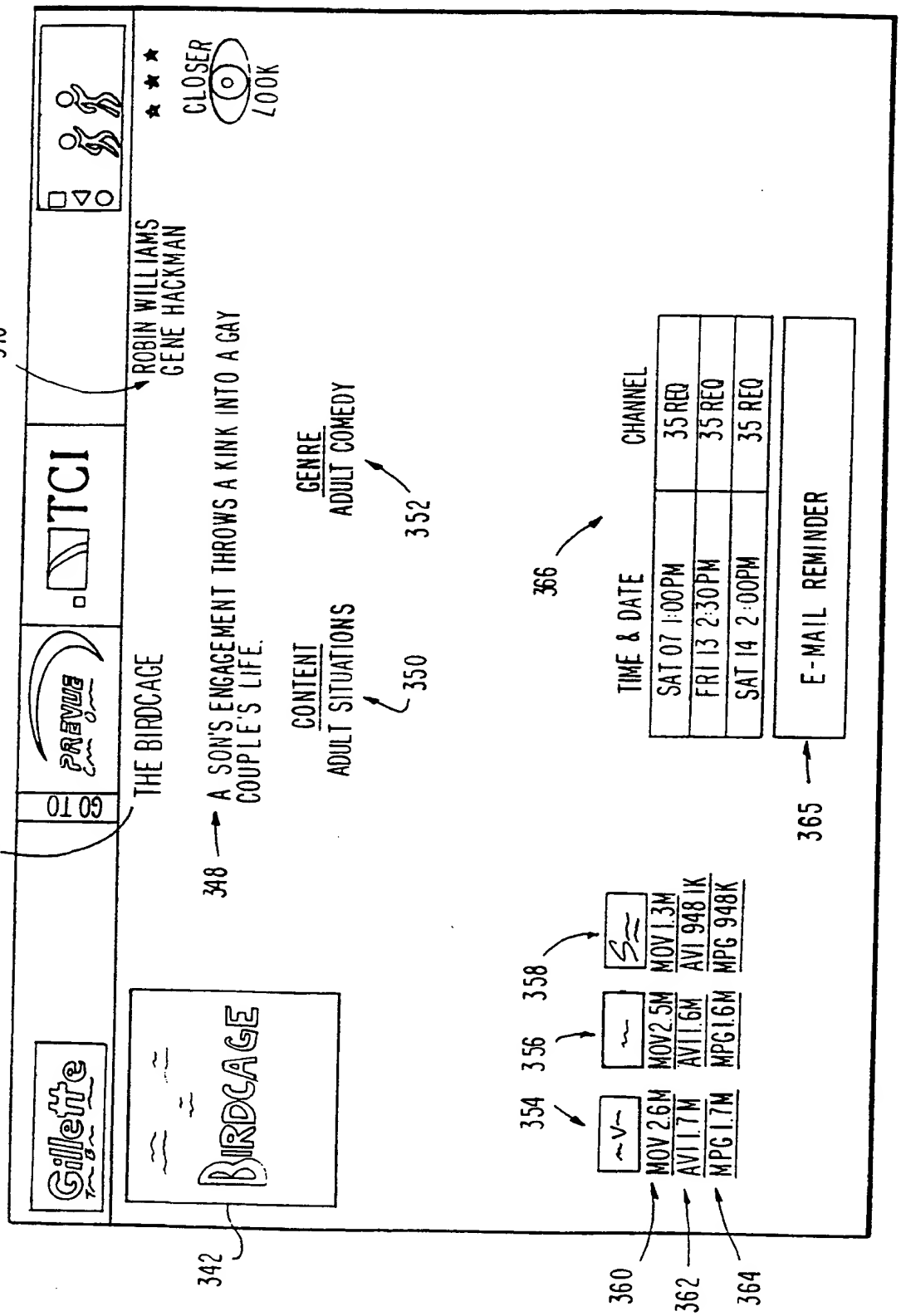

240
346
344
342
348
350
352
354
356
358
360
362
364
365
366
Gillette
BIRDCAGE
GO TO
PREVIEW
TCI
CLOSER LOOK
ROBIN WILLIAMS
GENE HACKMAN
THE BIRDCAGE
A SON'S ENGAGEMENT THROWS A KINK INTO A GAY COUPLE'S LIFE.
CONTENT
ADULT SITUATIONS
GENRE
ADULT COMEDY
MOV 2.6M
AVI 1.7M
MPG 1.7M
MOV 2.5M
AVI 1.6M
MPG 1.6M
MOV 1.3M
AVI 948 1K
MPG 948K
TIME & DATE
CHANNEL
SAT 07 1:00PM
35 REQ
FRI 13 2:30PM
35 REQ
SAT 14 2:00PM
35 REQ
E-MAIL REMINDER

FIG. 5

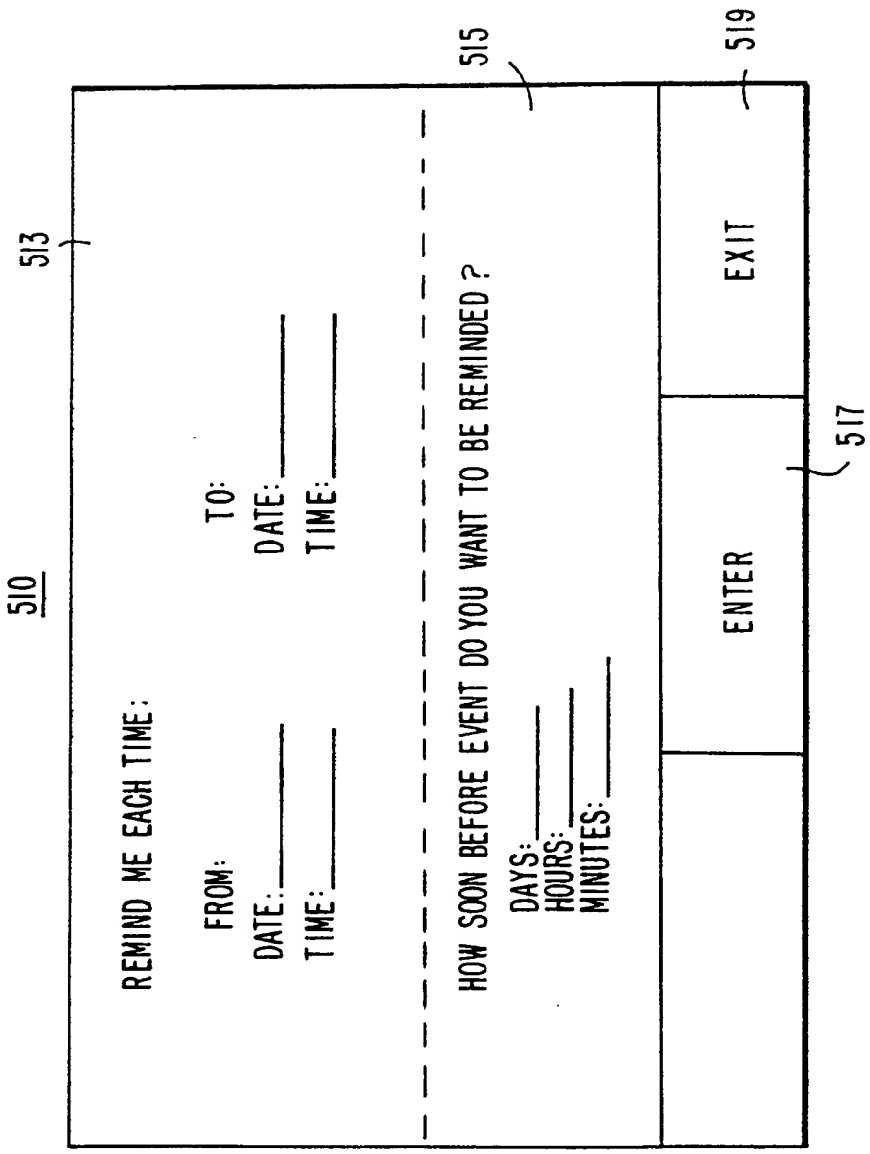

510
513
515
519
517
REMIND ME EACH TIME:
FROM:
DATE:
TIME:
TO:
DATE:
TIME:
HOW SOON BEFORE EVENT DO YOU WANT TO BE REMINDED ?
DAYS:
HOURS:
MINUTES:
EXIT
ENTER

FIG.6

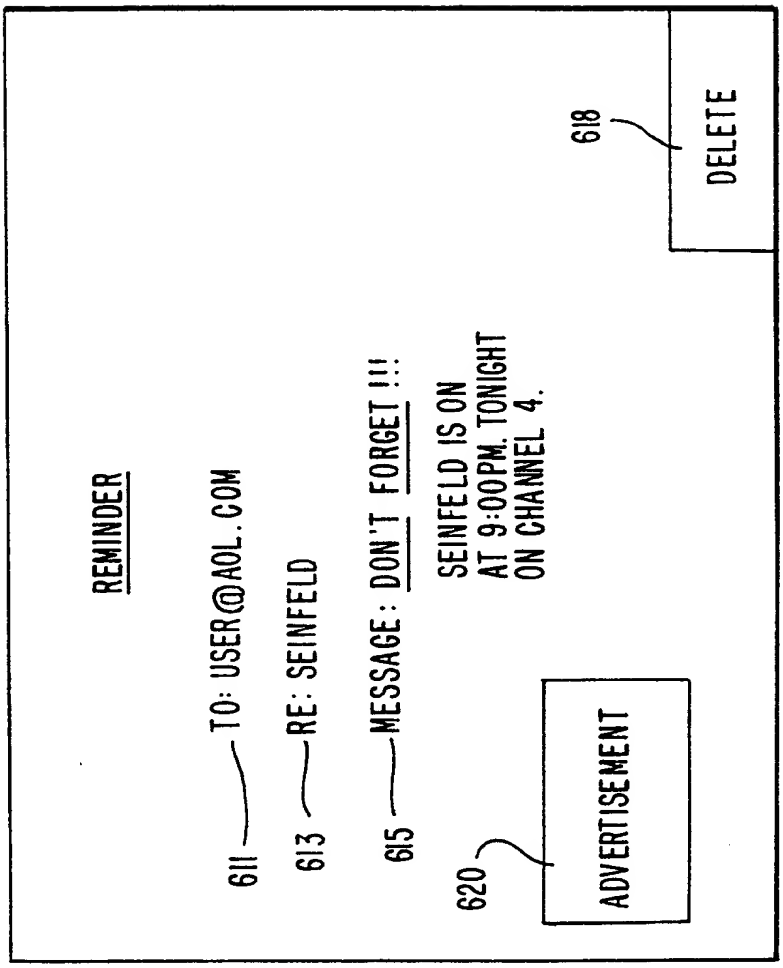

REMINDER
611
TO: USER@AOL.COM
613
RE: SEINFELD
615
MESSAGE: DON'T FORGET !!!
SEINFELD IS ON
AT 9:00PM. TONIGHT
ON CHANNEL 4.
620
ADVERTISEMENT
618
DELETE

FIG. 7

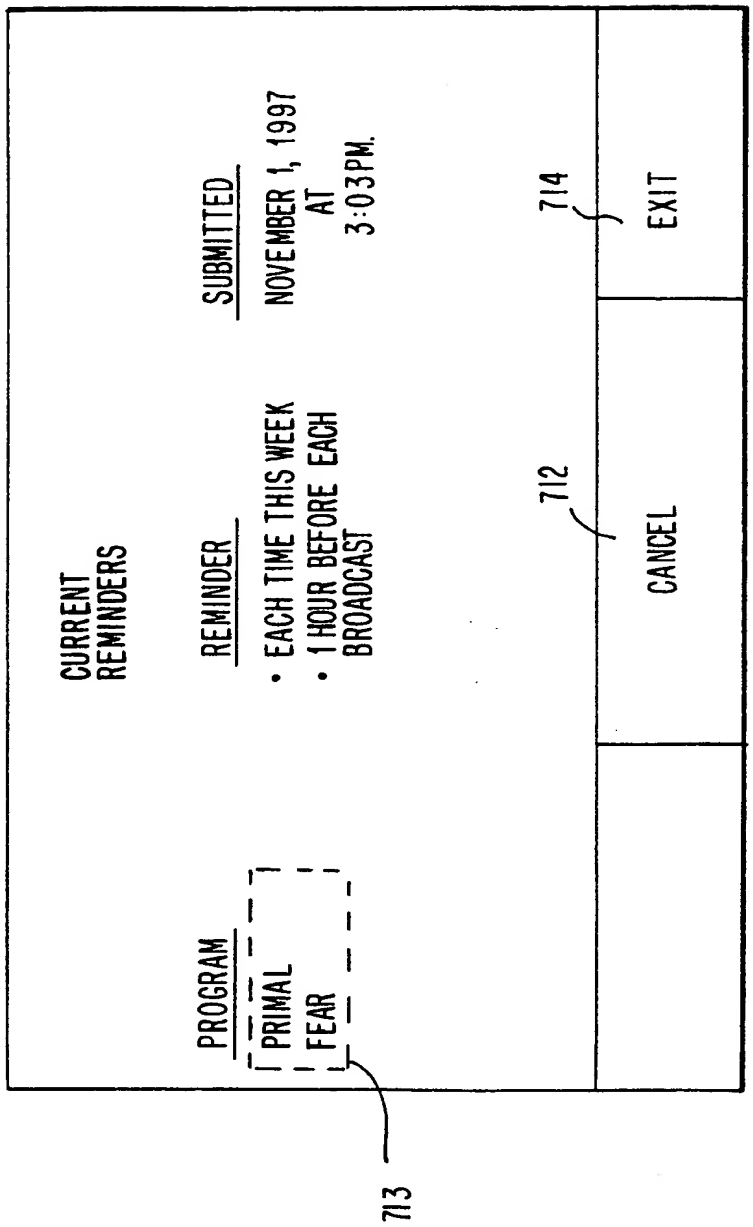

710
CURRENT REMINDERS
PROGRAM
PRIMAL FEAR
REMINDER
• EACH TIME THIS WEEK
• 1 HOUR BEFORE EACH BROADCAST
SUBMITTED
NOVEMBER 1, 1997 AT 3:03PM.
712
CANCEL
714
EXIT
713

FIG.8

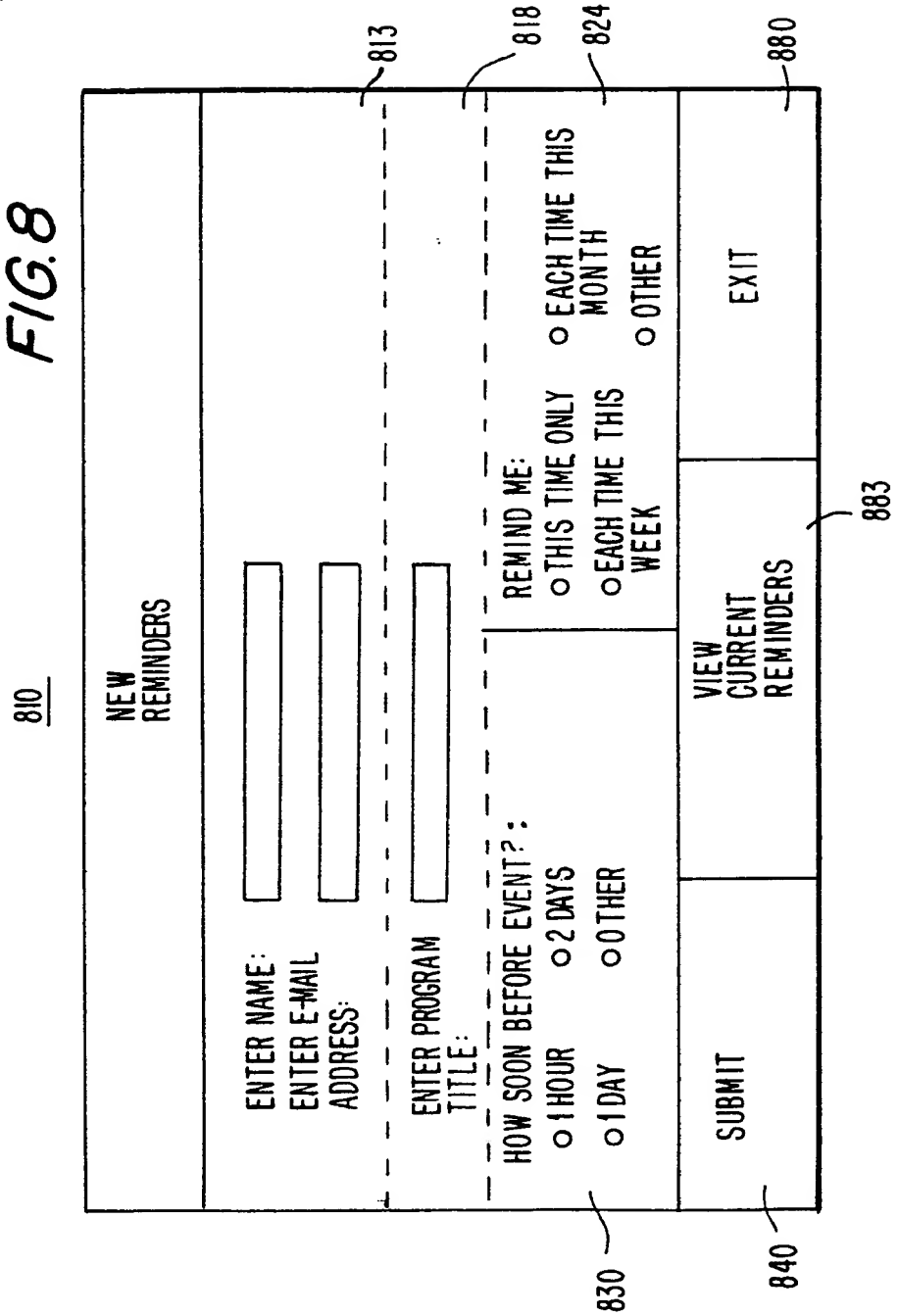

810
NEW REMINDERS
ENTER NAME:
ENTER E-MAIL ADDRESS:
ENTER PROGRAM TITLE:
HOW SOON BEFORE EVENT?:
o 1 HOUR
o 2 DAYS
o 1 DAY
o OTHER
REMIND ME:
o THIS TIME ONLY
o EACH TIME THIS WEEK
o EACH TIME THIS MONTH
o OTHER
SUBMIT
VIEW CURRENT REMINDERS
EXIT
813
818
824
880
883
830
840

FIG. 9

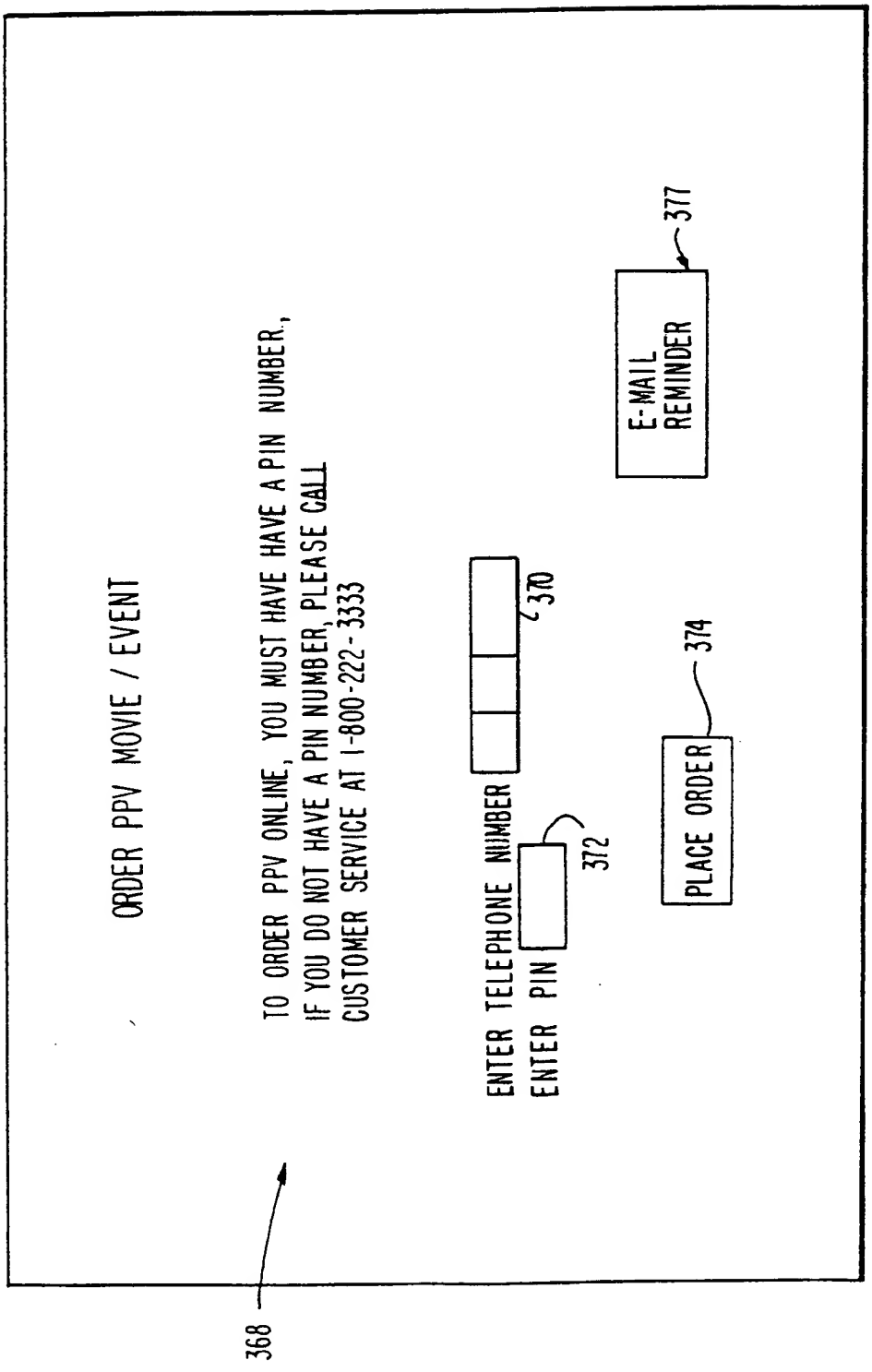

336
ORDER PPV MOVIE / EVENT
TO ORDER PPV ONLINE, YOU MUST HAVE HAVE A PIN NUMBER,
IF YOU DO NOT HAVE A PIN NUMBER, PLEASE CALL
CUSTOMER SERVICE AT 1-800-222-3333
ENTER TELEPHONE NUMBER
370
ENTER PIN
372
E-MAIL REMINDER
377
PLACE ORDER
374
368

FIG. 10

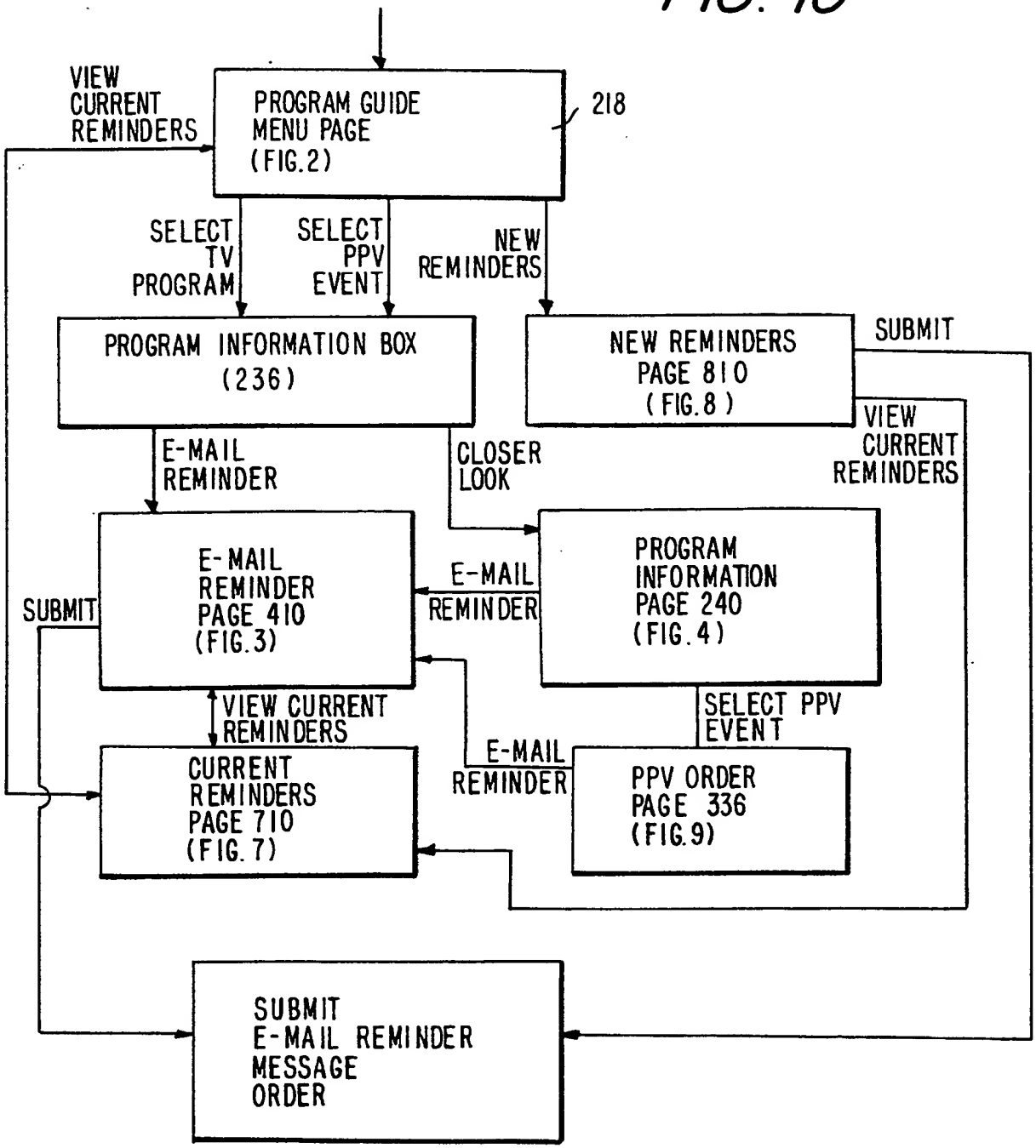

VIEW CURRENT REMINDERS
PROGRAM GUIDE MENU PAGE (FIG.2)
218
SELECT TV PROGRAM
SELECT PPV EVENT
NEW REMINDERS
PROGRAM INFORMATION BOX (236)
NEW REMINDERS PAGE 810 (FIG.8)
SUBMIT
VIEW CURRENT REMINDERS
E-MAIL REMINDER
CLOSER LOOK
E-MAIL REMINDER PAGE 410 (FIG.3)
E-MAIL REMINDER
PROGRAM INFORMATION PAGE 240 (FIG.4)
SUBMIT
VIEW CURRENT REMINDERS
SELECT PPV EVENT
E-MAIL REMINDER
CURRENT REMINDERS PAGE 710 (FIG.7)
PPV ORDER PAGE 336 (FIG.9)
SUBMIT E-MAIL REMINDER MESSAGE ORDER

FIG. 11

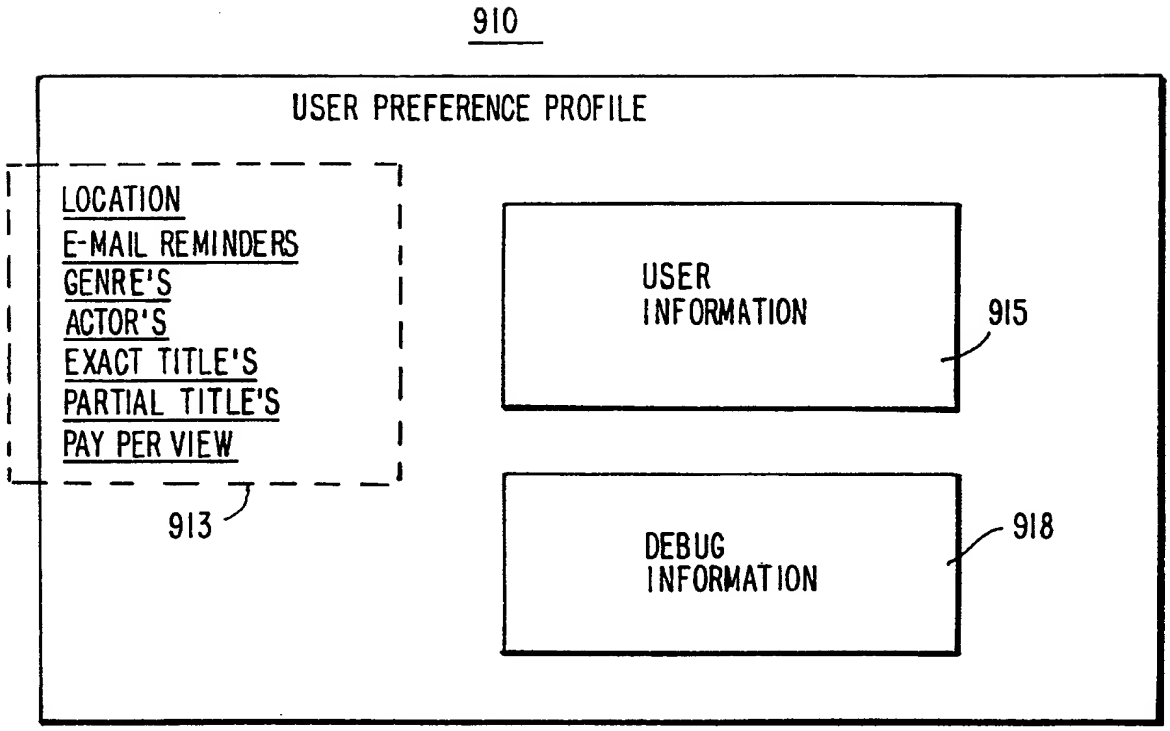

910
USER PREFERENCE PROFILE
LOCATION
E-MAIL REMINDERS
GENRE'S
ACTOR'S
EXACT TITLE'S
PARTIAL TITLE'S
PAY PER VIEW
913
USER INFORMATION
915
DEBUG INFORMATION
918

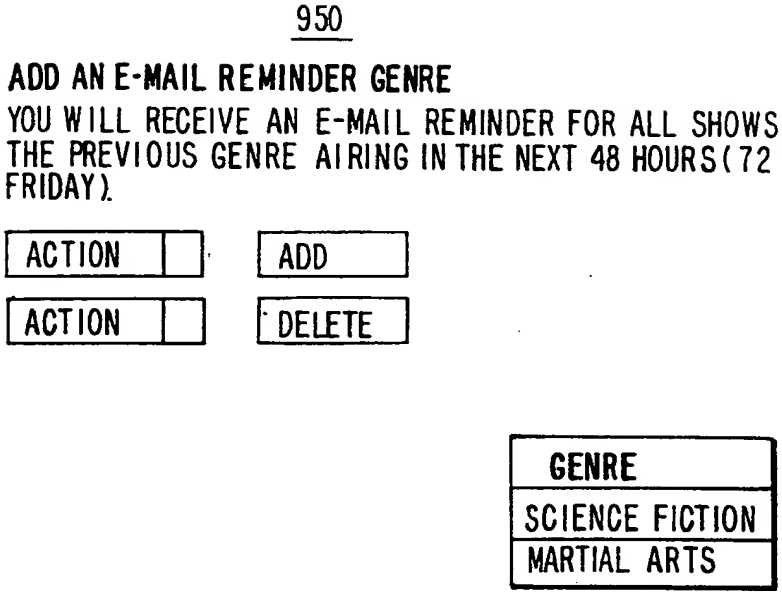
FIG. 12

TO: USER
SENT: FRI. NOVEMBER 21, 1997
RE: PREVUE ONLINE TV REMINDER

THANK YOU FOR VISITING PREVUE ONLINE!
YOU HAVE SOME FAVORITE SHOWS THAT ARE COMING UP SOON:

| | |
|---|---|
| CAST MEMBER PETA WILSON: | |
| SUNDAY | |
| 9:00 PM USA(27) | LA FEMME NIKITA |
| CAST MEMBER TERRY FARREL: | |
| SATURDAY | |
| 2:40 AM HBO(4) | RED SUN RISING |
| CAST MEMBER UMA: | |
| SUNDAY | |
| 12:00PM HBO(4) | THE TRUTH ABOUT CATS AND DOGS (FEATURING UMA THURMAN) |
| GENRE SCIENCE FICTION: | |
| FRIDAY | |
| 5:00PM SCI-FI(33) | SWAMP THING |
| ⋮ | |
| 10:15 PM AMC(25) | FIVE MILLION YEARS TO EARTH |
| SATURDAY | |
| 4:00 AM SCI-FI(33) | RETRO TV |
| ⋮ | |
| 11:35PM KOTV(6) | STAR TREK: DEEP SPACE NINE |
| SUNDAY | |
| 12:35AM KOTV(6) | PSI FACTOR |
| ⋮ | |
| 1:00PM KOTV(6) | THE ROCKETEER |

FIG. 13


950
ADD AN E-MAIL REMINDER GENRE
YOU WILL RECEIVE AN E-MAIL REMINDER FOR ALL SHOWS WITH THE PREVIOUS GENRE AIRING IN THE NEXT 48 HOURS(72 FROM FRIDAY).
ACTION
ADD
ACTION
DELETE
GENRE
SCIENCE FICTION
MARTIAL ARTS

E-MAIL REMINDERS WILL BE GENERATED FOR ALL PROGRAM'S WITH YOUR FAVORITE ACTORS ON YOUR LOCAL SYSTEM. PREVUE FIRST SCANS YOUR SYSTEM FOR THE NEXT 48 HOURS. ON FRIDAY'S WE DO A 3 DAY SCAN SO YOU WON'T MISS ANY ACTION FOR THE WEEKEND. DON'T FORGET TO PREVUE FIRST.

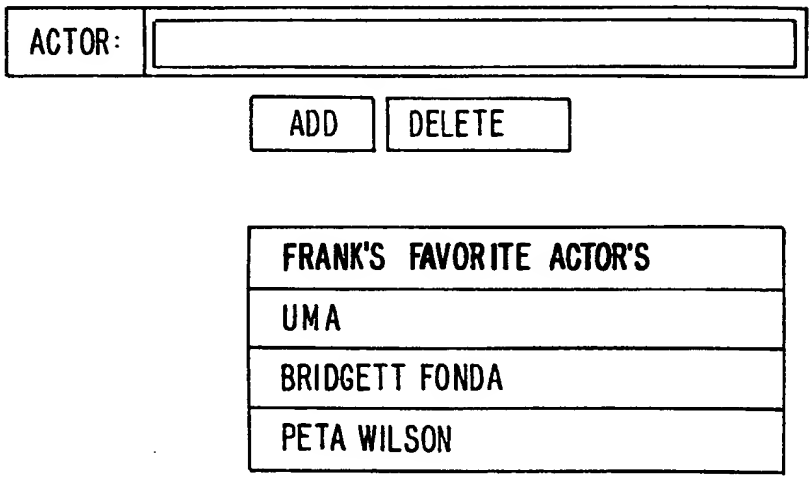



FIG. 14

E-MAIL REMINDERS WILL BE GENERATED FOR ALL TITLES THAT EXACTLY MATCH A PROGRAM ON YOUR LOCAL SYSTEM. PREVUE FIRST SCANS YOUR SYSTEM FOR THE NEXT 48 HOURS. ON FRIDAY'S WE DO A 3 DAY SCAN SO YOU WON'T MISS ANY ACTION FOR THE WEEKEND. DON'T FORGET TO PREVUE FIRST.

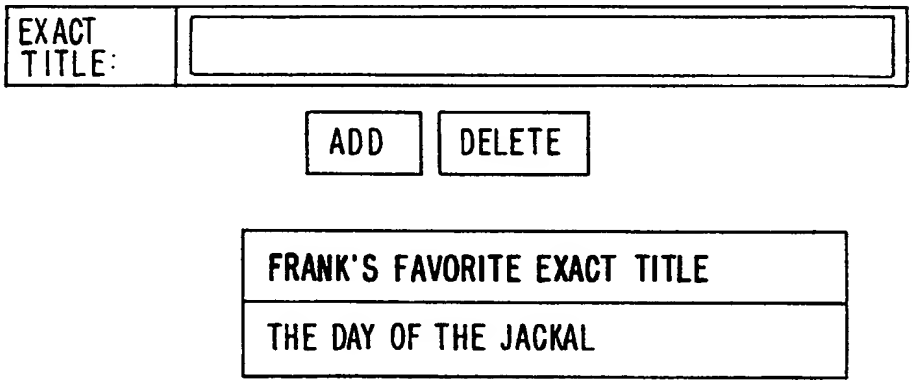



FIG. 15

E-MAIL REMINDERS WILL BE GENERATED FOR ALL TITLES THAT EXACTLY MATCH A PROGRAM ON YOUR LOCAL SYSTEM. PREVUE FIRST SCAN YOUR SYSTEM FOR THE NEXT 48 HOURS. ON FRIDAY'S WE DO A 3 DAY SCAN SO YOU WON'T MISS ANY ACTION FOR THE WEEKEND. DON'T FORGET TO PREVUE FIRST

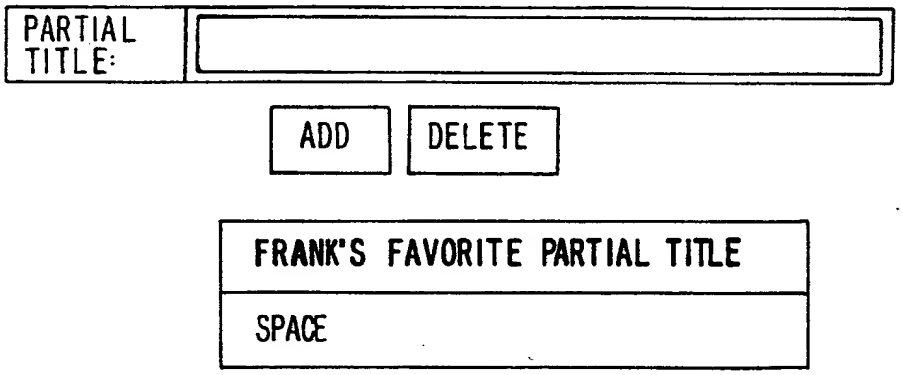



FIG. 16

# INTERNATIONAL SEARCH REPORT

In. .ational Application No
PCT/US 98/17125

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04N G06F G06G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and. where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate. of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | WO 97 02701 A (PHILIPS ELECTRONICS NV ;PHILIPS NORDEN AB (SE)) 23 January 1997<br>see abstract<br>see page 3, line 1 - page 4, line 19; figure 1<br>see page 18, line 17 - line 23<br>--- | 1,20 |
| A | WO 96 34491 A (TV GUIDE ON SCREEN) 31 October 1996<br>see page 5, line 13 - page 6, line 4<br>see page 6, line 29 - line 32<br>see page 24, line 1 - line 37; figures 13,14<br>see page 32, line 29 - line 36; figure 16<br>---<br>-/-- | 1,2,18, 20,21, 37,39 |

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

' Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 19 November 1998 | 27/11/1998 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office. P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Fuchs, P |

1

Form PCT/ISA/210 (second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 98/17125

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | WO 96 24213 A (FREEMARK COMMUNICATIONS INC) 8 August 1996<br>see page 2, line 15 - page 6, line 19 | 1,20 |

1

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Ir. .ational Application No
PCT/US 98/17125

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| WO 9702701 A | 23-01-1997 | AU 5908796 A | 05-02-1997 |
| | | BR 9606459 A | 13-01-1998 |
| | | CA 2198894 A | 23-01-1997 |
| | | CN 1164948 A | 12-11-1997 |
| | | EP 0779009 A | 18-06-1997 |
| | | JP 10505730 T | 02-06-1998 |
| WO 9634491 A | 31-10-1996 | AU 5572996 A | 18-11-1996 |
| | | CA 2218993 A | 31-10-1996 |
| | | EP 0823179 A | 11-02-1998 |
| | | PL 323047 A | 02-03-1998 |
| | | US 5589892 A | 31-12-1996 |
| WO 9624213 A | 08-08-1996 | AU 4902096 A | 21-08-1996 |

**PCT** WORLD INTELLECTUAL PROPERTY ORGANIZATION
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04N 5/445 — A1

(11) International Publication Number: **WO 99/45701**

(43) International Publication Date: 10 September 1999 (10.09.99)

(21) International Application Number: PCT/US99/04143

(22) International Filing Date: 25 February 1999 (25.02.99)

(30) Priority Data:
09/034,934 4 March 1998 (04.03.98) US

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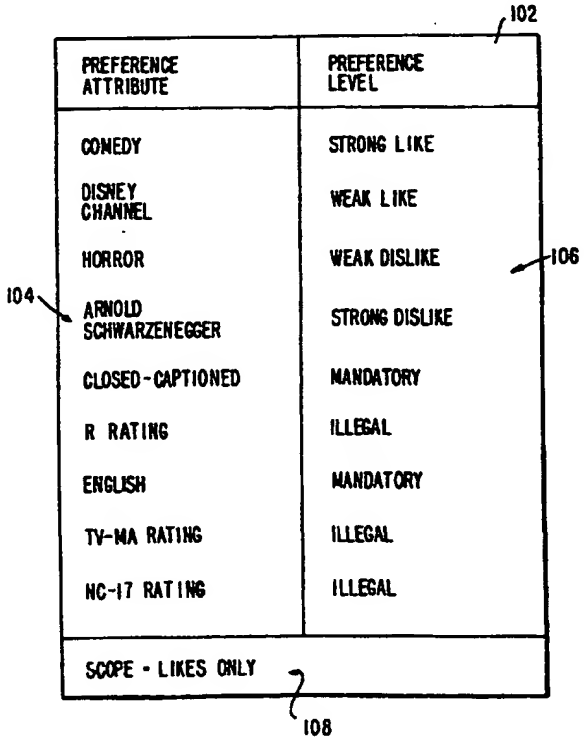
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

**Published**
*With international search report.*

(54) Title: PROGRAM GUIDE SYSTEM WITH PREFERENCE PROFILES

(57) Abstract

An interactive television program guide system is provided in which a user may inform a program guide of the user's interests. Information on the user's interests may be stored in a preference profile. There may be more than one preference profile, each for a different user. Each preference profile contains a number of preference attributes (program titles, genres, viewing times, channels, broadcast characteristics, etc.). A preference level (e.g., strong or weak like, strong or weak dislike, illegal, mandatory, don't care, etc.) that is indicative of the user's level of interest is associated with each preference attribute. Preference profiles may be used to restrict the programs that are listed in various program listings display screens and may be used to limit the channels to which the program guide allows the user to tune.



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# PROGRAM GUIDE SYSTEM WITH PREFERENCE PROFILES

## Background of the Invention

This invention relates to interactive television program guides, and more particularly, to television program guides in which users may create profiles of their programming preferences. Profiles contain information about the user's interests (e.g., favored or disfavored programming genres, actors, channels, series, etc.) The profiles are used by the program guide in determining which channels the user may tune to and which programs are to be included in various lists displayed by the guide.

Cable, satellite, and broadcast television systems provide viewers with a large number of television channels. Viewers have traditionally consulted printed television program schedules to determine the programs being broadcast at a particular time. More recently, interactive electronic television program guides have been developed that allow television program information to be displayed on a viewer's television.

Interactive program guides are typically implemented on set-top boxes. Such program guides allow users to view television program listings in different display formats. For example, a user may instruct the program guide to display a grid or table of program listings organized in a channel-ordered or a time-ordered list. Users may also search and sort program listings by genre (e.g., movies, sports, etc.) or by title (i.e, alphabetically). A user may obtain additional information for a program by placing a highlight region on a desired program listing and pressing an "info" button. The user may purchase a pay program from the program guide by placing the highlight region on a program listing and pressing an "OK" button. Some systems allow the user to select a program for recording by placing the highlight region on a program listing and pressing a "record" button.

Because there are so many television channels available, particularly with cable and satellite television systems, television program guides have been developed that allow users to establish lists of favorite channels. When a user is channel surfing, the set top box on which the program guide is implemented can be directed to tune only to channels contained in the favorite channel list. When the user directs the program guide to display current or future programming, the displayed list of programs is restricted to television programs that occur only on the user's preselected favorite channels.

This approach is not very selective. Even though a user may have chosen a channel as a favorite, some of the programming that appears on that channel

may not be of interest to the user. Moreover, programs that would be of interest to the user often appear on channels that the user has not chosen as favorites (e.g., because the user does not like most of the programming on those channels).

What is needed is a more sophisticated way in which a user may inform a program guide of the user's preferences, so that the program guide can more accurately filter out disliked programming while retaining more programming of the type the user likes.

It is therefore an object of the present invention to provide a program guide system with which a user may set up a profile based on various preference attributes.

## Summary of the Invention

These and other objects of the invention are accomplished in accordance with the principles of the present invention by providing an interactive television program guide system in which a user may inform a program guide of the user's television programming interests. The user may specify a number of preference attributes such as program title, genre, start time, broadcast characteristics, language, rating, critics ratings, actor, etc. Each preference attribute has an associated preference level that is indicative of the user's interest in that attribute. Suitable preference levels include: strong like, weak like, strong dislike, weak dislike, illegal, mandatory, and don't care.

The program guide may maintain the preference attributes and associated preference levels for a user

in a preference profile. Different preference profiles may be used by different users of the same program guide. If desired, more than one preference profile may be active at a given time.

The program guide may use the preference profiles when displaying lists of available television programming. Only those programs that satisfy the preference profile will be displayed by the program guide, even if other programs are available. Another way in which the program guide may use the preference profiles is to restrict the programs to which the user may tune with the system to only those programs that satisfy the profile.

A user may define a preferred sort order for programs that satisfy the profile. The user may also specify a desired preference scope. A narrow scope may be used to restrict programming choices to programs that are liked, whereas a wide scope may be used to restrict programming choices to programs that are just not disliked.

The user may direct the program guide to require a personal identification number (PIN) in order to access certain profile modification options. Such personal identification number access control may be used by parents to control the television viewing of their children.

A master profile may be used that has settings that override the settings in other profiles.

Profiles may contain non-program settings for controlling audio and display options in the system.

Further features of the invention, its nature and various advantages will be more apparent from the

accompanying drawings and the following detailed description of the preferred embodiments.

Brief Description of the Drawings

FIG. 1 is a diagram of a system in which an interactive television program guide is implemented in accordance with the present invention.

FIGS. 2a and 2b are flow charts of steps involved in providing options for selecting various preference profile attributes in accordance with the present invention.

FIG. 3 is a diagram of an illustrative preference profile showing how multiple preference attributes of the same type may be associated with the same preference profile.

FIG. 4 is a flow chart showing steps involved in using the program guide with a specified sort order in accordance with the present invention.

FIG. 5 is a flow chart of steps involved in allowing a selected preference attribute to expire or be deselected in accordance with the present invention.

FIG. 6 is a flow chart of steps involved in using the program guide with various preference scopes in accordance with the present invention.

FIG. 7 is a diagram of an illustrative preference profile containing multiple preference attributes and their associated preference levels and an associated preference scope in accordance with the present invention.

FIG. 8 is a table illustrating the titles, genres, closed-caption status, and ratings associated with a number of programs and illustrating which groups

of these programs would satisfy the profile of FIG. 7 with various different preference scopes in accordance with the present invention.

FIG. 9 is a diagram illustrating how multiple profiles may be used and how a given preference attribute may be associated with more than one such profile in accordance with the present invention.

FIG. 10 is a flow chart of steps involved in selecting a profile to make active and displaying programming or allowing tuning based on one or more active profiles in accordance with the present invention.

FIG. 11 is a flow chart illustrating how the program guide provides an opportunity to modify a profile based on the characteristics of a selected program in accordance with the present invention.

FIG. 12 is a diagram of an illustrative profiles display in accordance with the present invention.

FIG. 13 is a diagram of another illustrative profiles display in accordance with the present invention.

FIG. 14 is a flow chart of steps involved in automatically modifying a profile based on which programs a user watches in accordance with the present invention.

FIG. 15 is a flow chart of steps involved in using automatic reminders based on a preference profile in accordance with the present invention.

FIG. 16 is a diagram of an illustrative create profile screen and an illustrative set up

profile screen in accordance with the present invention.

FIG. 17 is a flow chart of steps involved in providing various display mode options in accordance with the present invention.

FIG. 18 is an illustrative navigator menu containing a favorites display mode option in accordance with the present invention.

FIG. 19 is an illustrative by-time favorites list display in accordance with the present invention.

FIG. 20 is a diagram of an illustrative flip feature for the program guide in accordance with the present invention.

FIG. 21 is a diagram of an illustrative browse feature for the program guide in accordance with the present invention.

FIG. 22 is a diagram of a program listings screen illustrating the restricted highlight movement mode in accordance with the present invention.

FIG. 23 is a flow chart of steps involved displaying programs in various display modes in accordance with the present invention.

FIG. 24 is an illustrative program listings screen showing how programs that satisfy different preference profiles can be listed with different colors, patterns, or icons in accordance with the present invention.

FIG. 25 is an illustrative hot list in accordance with the present invention.

FIG. 26 is a flow chart of the step of providing the option of displaying a hot list a short

time before the start time of the programs on the hot list in accordance with the present invention.

FIG. 27 is a flow chart of steps involved in displaying a hot list in various formats in accordance with the present invention.

FIG. 28 is an illustrative personal identification number setup screen in accordance with the present invention.

FIG. 29 is a diagram illustrating the concurrent use of both a master profile and another profile in accordance with the present invention.

FIG. 30 is a flow chart of illustrative steps involved in using a master profile in accordance with the present invention.

FIG. 31 is a diagram illustrating how both program settings and non-program settings may be associated with a given preference profile in accordance with the present invention.

FIG. 32 is a flow chart of illustrative steps involved in using a preference profile to specify certain non-program settings in accordance with the present invention.

Detailed Description of the Preferred Embodiments

An illustrative program guide system 30 in accordance with the present invention is shown in FIG. 1. Main facility 32 contains a program guide database 34 for storing program guide information such as television program guide listings data, pay-per-view ordering information, television program promotional information, etc. Information from database 34 may be transmitted to television distribution facility 36 via

communications link 38. Link 38 may be a satellite link, a telephone network link, a cable or fiber optic link, a microwave link, a combination of such links, or any other suitable communications path. If it is desired to transmit video signals over link 38 in addition to data signals, a relatively high bandwidth link such as a satellite link is generally preferable to a relatively low bandwidth link such as a telephone line.

Television distribution facility 36 is a facility for distributing television signals to users, such as a cable system headend, a broadcast distribution facility, or a satellite television distribution facility.

The program guide information transmitted by main facility 32 to television distribution facility 36 includes television program listings data for current and future television programs. The television program listings data for each program preferably includes the title of the program, the channel for the program, a scheduled broadcast time (start time) and an ending time (or duration). Other typical program listings data include ratings, critics ratings, descriptions, genres (sports, movies, children, etc.), actors, etc. Transmitted program information may also include advertising information and pay program data such as pricing information for individual programs and subscription channels, time windows for ordering programs and channels, telephone numbers for placing orders that cannot be impulse ordered, etc.

Television distribution facility 36 distributes television programming and program guide

information to the user television equipment 40 of multiple users via communications paths 42. For example, television programming may be distributed over analog television channels and program guide data may be distributed over an out-of-band channel on paths 42. Data distribution may also involve using one or more digital channels on paths 42. Such digital channels may also be used for distributing television programming and other information. Multiple television and audio channels (analog, digital, or both analog and digital) may be provided to set-top boxes 44 via communications paths 42. If desired, program listings and other information may be distributed by one or more distribution facilities that are similar to but separate from television distribution facility 36 using communications paths that are separate from communications paths 42.

Certain functions such as pay program purchasing may require set-top boxes 44 to transmit data to television distribution facility 36 over communications paths 42. If desired, such data may be transmitted over telephone lines or other separate communications paths. If functions such as these are provided using facilities separate from television distribution facility 36, some of the communications involving set-top boxes 44 may be made directly with the separate facilities.

Each user has a receiver, which is typically a set-top box such as set-top box 44, but which may be other suitable television equipment into which circuitry similar to set-top-box circuitry has been integrated. Program guide data is distributed to set-

top boxes 44 periodically. Television distribution facility 36 may also poll set-top boxes 44 periodically for certain information (e.g., pay program account information or information regarding programs that have been purchased and viewed using locally-generated authorization techniques). Main facility 32 preferably contains a processor to handle information distribution tasks. Each set-top box 44 preferably contains a processor to handle tasks associated with implementing a program guide application on the set-top box 44. Television distribution facility 36 may contain a processor for tasks associated with monitoring a user's interactions with the interactive program guide implemented on set-top boxes 44 and for handling tasks associated with the distribution of program guide data and other information to user television equipment 40.

Each set-top box 44 is typically connected to an optional videocassette recorder 46 so that selected television programs may be recorded. Each videocassette recorder 46 is connected to a television 48. To record a program, set-top box 44 tunes to a particular channel and sends control signals to videocassette recorder 46 (e.g., using an infrared transmitter) that direct videocassette recorder 46 to start and stop recording at the appropriate times.

During use of the interactive television program guide implemented on set-top box 44, television program listings and other information may be displayed on television 48. Such program guide displays may be presented on top of a television program to which the user has tuned with set-top box 44 or may be presented in place of such a program. Each set-top box 44,

videocassette recorder 46, and television 48 may be controlled by one or more remote controls 50 or any other suitable user input interface such as a wireless keyboard, mouse, trackball, dedicated set of buttons, etc. Remote controls such as remote control 50 have various buttons that may be pressed by the user such as cursor keys (for on-screen movement of a highlight region, scrolling functions, etc.), an enter key (for making a selection), channel number keys (for selecting a television channel), a favorites key (to invoke functions related to user preferences), etc.

Because television viewers sometimes feel overwhelmed by the large number of programming choices that are available, particularly with modern cable and satellite systems, the present invention allows users to inform the program guide of their programming preferences. The program guide may then tailor its operation to reflect the user's programming interests.

For example, a user may inform the program guide that the user likes the program Seinfeld and the programming genre "movies," but dislikes the actor John Wayne. The program guide can use these preferences to limit the amount of material that is presented to the user (e.g., when generating lists of television program choices or when deciding which channels to allow the user to tune to with the set-top box). The different types of television program characteristics that a user may indicate a preference about are referred to herein as preference attributes.

Each preference attribute may have an associated preference level. For example, users may indicate whether a preference attribute is liked,

disliked, illegal, mandatory or don't care (neutral). The degree to which a user likes or dislikes certain preference attributes may also be specified. For example, the user may indicate that the preference level associated with the preference attribute of the genre sports is a strong like and that the preference level associated with the preference attribute of the actor John Wayne is a weak dislike.

The program guide implemented on set-top box 44 provides various options that allow the user to specify which different preference attributes are to be used in presenting television program listings information to the user. Such options may be provided in the form of clickable menu items, drop-down lists, or any other suitable format. The user may select a desired menu item using a highlight region, cursor, arrow, or other suitable on-screen indicator that may be positioned over an option on the display (i.e., television 48). For example, a user may position a highlight region over a desired menu item and press "OK" on remote control 50 to complete the selection. Selections that involve entering characters may be made by selecting characters from characters displayed on screen (e.g., using cursors to move through the alphabet) or by using a wireless keyboard or other alphanumeric entry device.

Steps that are involved in providing preference attribute options with the program guide are shown in FIGS. 2a and 2b. At step 52 of FIG. 2a, the program guide may provide the user with the option of selecting a certain type of channel (such as the pay-per-view channel type) as a preference attribute. This

feature allows a user to express an interest in, e.g., pay-per-view programming without requiring the user to individually select or even know the names of all of the pay-per-view channels that are available.

At step 54, the program guide may provide the user with the option of selecting a given airing of a program as a preference attribute. For example, if the user wishes to watch the next broadcast of the program Seinfeld at 9:00 on Thursday, the user may select that broadcast of Seinfeld as a preference attribute and may indicate that the selection has a preference level of "strong like." This effectively allows the user to use the indicated preference as a reminder (e.g., in situations in which the program guide has been configured to present an on-screen reminder of all upcoming programs that satisfy the user's selected preferences).

At step 56, the program guide may provide the user with the option of selecting a given program series as a preference attribute. For example, the user could indicate an interest in the Seinfeld series. When the user directs the program guide to present a list of available programs, the programs that are listed will include those in the Seinfeld series (unless a conflicting preference prevents such a program from being listed).

At step 58, the program guide may provide the user with the option of selecting as a preference attribute a program genre (category) or other suitable grouping (e.g., all programs aired on Sundays, etc. -- that are not in a traditional genre, but that are in some way related). For example, the genre (which may

be a subgenre) may be sports, children's programming, news, weather, movies, action, horror, baseball, football, comedy, etc.

At step 60, the program guide may provide the user with the option of selecting a rating (G, PG, TV-Y, etc.), a range of ratings (e.g., the R rating and all ratings for more mature audiences), or a parental control advisory (e.g., this program contains strong language, etc.) as a preference attribute.

At step 62, the program guide may provide the user with the option of selecting an actor or actress as a preference attribute.

At step 64, the program guide may provide the user with the option of selecting a topic (e.g., cooking, photography, music, painting), keyword (e.g., cooks, etc.), or sporting team as a preference attribute.

As shown in FIG. 2b, at step 66 the program guide may provide the user with the option of selecting a given word or phrase in a program description as a preference attribute. The program guide may search all program descriptions for the presence of the selected word or phrase when determining whether a program satisfies the user's preference criteria.

At step 68, the program guide may provide the user with the option of selecting a channel as a preference attribute.

At step 70, the program guide may provide the user with the option of selecting a start time (e.g., a scheduled broadcast time), an end time, or a range of broadcast times as a preference attribute. This

feature may be used for parental control by restricting the viewing times available for children.

At step 72, the program guide may provide the user with the option of selecting original (or rerun) programs as a preference attribute.

At step 74, the program guide may provide the user with the option of selecting a given broadcast characteristic such as closed-captioning or secondary audio as a preference attribute.

At step 76, the program guide may provide the user with the option of selecting a language as a preference attribute.

At step 78, the program guide may provide the user with the option of selecting a certain critics rating (e.g., three stars, or three stars or greater, etc.) as a preference attribute.

The steps involved in providing the preference attribute selection options shown in FIGS. 2a and 2b are illustrative only and the program guide may provide the user with the option of selecting any other suitable preference attributes if desired. Moreover, the order of the steps shown in FIGS. 2a and 2b is not important. Typically, several such options are provided at the same time (e.g., on the same menu screen).

The preference attributes the user selects may be organized in a profile (sometimes called a preference profile or a favorites profile). If there are several users (e.g., different family members) associated with a given program guide, each user may have his own profile. A profile may contain more than one preference attribute of the same type. For

example, preference profile 80 of FIG. 3 has three series preference attributes (series Nos. 1, 2, and 3), four genre preference attributes (movies, game shows, news, baseball, and comedy), and two actor preference attributes (John Wayne and Arnold Schwarzenegger).

If desired, the user may specify a priority or sort order in which programs satisfying the preference criteria in a profile are to be displayed or tuned to. When listing or tuning to programs that satisfy a profile, the programs matching the highest priority preference attributes may be tuned to (with set-top box 44) or listed (on the display of television 48) first. This feature is particularly useful when a user wishes to further simplify the process of selecting programs of interest.

FIG. 4 shows how the program guide provides the user with the option of specifying the sort order (i.e., priority) for each of the selected preference attributes at step 82. If the user chooses to list programs satisfying the profile criteria, the program guide may display a list of the current or future programs based on the selected preference attributes and the specified sort order at step 84. If the user chooses to use the profile to limit the channels that may be tuned to, rather than displaying a list of results, the program guide may allow tuning to channels and programs based on the selected preference attributes in the profile and the specified sort order at step 86.

When a user selects an individual showing of a program as part of a preference profile, the program guide will allow that selection to expire at the end of

the program. This is shown as step 88 in FIG. 5. The program guide may allow preference attributes that have been selected by the user to remain valid until deselected by the user (step 90).

Preference levels that may be used to indicate the user's interest or disinterest in a given preference attribute include strong like, weak like, strong dislike, or weak dislike, mandatory (appropriate, e.g., for closed-captioning for a deaf person), illegal (appropriate for R-rated programs for a child) and don't care (neutral). As shown in FIG. 6, after the program guide provides the user with an opportunity (option) for selecting preference attributes at step 92, the program guide provides an option that allows the user to set one of at least several available preference levels for each selected preference attribute at step 94.

The program guide also allows the user to specify a preference scope at step 96. Each profile may have a separate associated preference scope. The preference scope is used to determine which programs that match the preference criteria in the profile will be displayed (or used when tuning). If the user opts to display a list of programs based on a preference profile, the program guide may display a list of current or future programming based on the selected preference attributes, selected preference levels, and preference scope that are associated with the profile at step 98. If the user opts to have the program guide restrict the user's tuning options based on the preference profile, the program guide may allow tuning to certain channels or programs based on the selected

preference attributes, selected preference levels, and the selected preference scope that are associated with the profile at step 100. The program listings information that is used by the program guide in displaying the list of programs or in controlling the tuning of the set-top box is the program listings data provided to the program guide by the television distribution facility.

An illustrative preference profile 102 containing a number of preference attributes 104, associated preference levels 106, and an associated preference scope 108 is shown in FIG. 7. FIG. 8 is a table containing an illustrative list of programs that might be available to the user (under the title column). The results that appear under the columns labeled "narrow scope," "moderate scope," and "wide scope" show which programs (from the titles column) satisfy the preference attributes and preference levels of profile 102 (FIG. 7).

When the user selects the widest scope in the example of FIG. 8, the program guide lists (or allows tuning to) programs that have all mandatory attributes and no illegal attributes. For example, Seinfeld is included in the widest preference scope because Seinfeld has the only mandatory attribute that is specified in profile 102 of FIG. 7 -- closed-captioning. In addition, Seinfeld has no preference attributes with a preference level of illegal (R rating, TV-MA rating, or NC-17 rating). The Night at the Opera is not included because it does not have a mandatory attribute (closed-captioning). Dante's Peak is not included because it has a illegal rating (R).

When the user selects the moderate scope in the example of FIG. 8, the program guide lists (or allows tuning to) programs that have no preference attributes with an associated preference level of disliked and that have all mandatory attributes and no illegal attributes. The program Terminator is not within the moderate scope example of FIG. 8 because the preference attribute of horror in profile 102 of FIG. 7 has an associated preference level of "weak dislike" and the preference attribute of Schwarzenegger (an actor in the program Terminator) has an associated preference level of "strong dislike." When faced with two different preference levels associated with the same program, the program guide uses the stronger of the two (in this case "strong dislike"). The program ER is included within the moderate scope example of FIG. 8 because it does not have any disliked attributes.

When the user selects the narrow preference scope in the example of FIG. 8, the program guide lists (or allows tuning to) all liked programs that are not more disliked and that have all mandatory attributes and no illegal attributes. The program ER is not within the narrow scope example, because it does not have any liked attributes.

The program guide allows multiple profiles to be used. For example, different users (e.g., different family members who share user television equipment 40) may each have their own profile. One profile maybe used for children. Another profile may be used for children when watching television with their parents (who can supervise). A profile may be created for each

adult. Another profile may be created for adults to use when watching television together.

An illustrative set of profiles is shown in FIG. 9. Profile No. 1 belongs to a first user who has a strong like for the program Seinfeld, a strong like for the genre comedy, a strong dislike for the genre horror, a weak dislike for reruns, and a strong like for programs containing the text string "Bond." The first user has selected a narrow preference scope. Profile No. 2 belongs to a second user who has a weak like for the ESPN channel, a strong like for the genre hockey, a weak like for the broadcast characteristic second audio program (SAP), and a weak like for comedy. The second user has selected a moderate preference scope. Profile No. 3 belongs to a third user who has a strong like for programs with a critics rating of three stars or more, a strong like for the genre movies, a strong dislike for the genre sports, and a weak like for pay-per-view programs. The third user has selected a preference scope of narrow.

Although each profile has its own independent set of preference attributes, any given attribute may be in more than one profile. For example, the attribute comedy appears in both profile No. 1 and profile No. 2.

When a user desires to use the program guide, the user may activate an appropriate profile. As shown in FIG. 10, the program guide provides users with the option of selecting which profile to make active at step 110. More than one profile may be active at a given time. If a single profile is made active at step 110, the program guide displays lists of programming or

allows tuning to certain channels or programs based on that single active profile at step 112. If multiple profiles are made active at step 110, the program guide displays lists of programing or allows tuning to certain channels or programs based on the multiple profiles that are active at step 112.

When multiple profiles are used at the same time, the program guide resolves conflicts between profiles. For example, if one profile indicates that comedy is a strong like and another indicates that comedy is a strong dislike, the program guide may use a preference level of neutral for the attribute comedy. Conflicts between the scopes selected in different profiles may be resolved, for example, by using a moderate scope for all situations in which multiple profiles are active. These techniques for allowing multiple profiles to be active at the same time are illustrative only. Any other suitable technique may be used if desired.

Preference attributes may be added to a profile by example. This is illustrated in FIG. 11. At step 114, the user may tune set-top box 44 to a channel (e.g., channel 9) to watch a desired television program (e.g., the program Seinfeld) or may highlight a desired program listing on any suitable program listings screen. The user may then press an appropriate button on the remote control (e.g., a "FAV" or favorites key) or may click on an on-screen option. The program guide then provides an opportunity to modify or create a profile based on the characteristics of the selected program or the highlighted program listing at step 116.

For example, as shown in FIG. 12, the program guide may present a profiles display such as profiles display 118 in which all attributes of the selected program or highlighted program listing (Seinfeld) are listed in column 120 and the associated preference levels are listed in column 122. The user may select which profile to change or update when highlight region 124 is on a profile name 126 such as "Mike." As indicated by arrows 128 and 130, when the user presses left or right cursor keys on the remote control, the profile names for other users will be displayed under highlight region 124. By pressing a down cursor key, highlight region 124 may be moved to preference level selection region 132, where the user may use the right and left cursor keys to set the desired preference level (e.g., strong or weak like or dislike, don't care or neutral, illegal, or mandatory) for the program Seinfeld. The preference levels in column 122 may be modified similarly for each of the other attributes listed in column 120. The neutral preference level "don't care" may be set as a default. If desired, a previously selected attribute may be deselected from the profile. A new profile may be created by copying an existing profile and modifying its contents.

Another way in which profiles may be modified is shown in FIG. 13. Profiles display 134 of FIG. 13 allows the user to view all selected attributes for a given profile. The program guide provides option 136 to allow the user to select which profile the user wishes to modify (e.g., "Mike" in the example of FIG. 13). Option 138 allows the user to set preference levels for various programs. Option 140 allows the

user to set preference levels for various categories. Option 142 allows the user to set preference levels for various ratings. Option 144 allows the user to set preference levels for various channels. The options shown in profiles display 134 are illustrative only. Options may for provided for setting the preference levels of any desired preference attributes. The format of the options shown in FIG. 13 is also only illustrative.

Other user interfaces may be used by the program guide if desired. For example, it may be preferable to select ratings from a list (i.e., using arrows 146 in option 142 to select from among various available ratings choices). In option 138, the program guide may allow the user to enter the first few characters of a desired title. The program guide may then present a list of available titles that start with those letters. When the list has been narrowed sufficiently, the user may select the desired program title from the list. The program guide may allow text to be entered letter by letter using the cursor keys on the remote to change each letter, using a wireless keyboard, using the numeric keys on the remote to enter letters corresponding to a telephone keypad, etc. If desired, the program guide may allow users to remove attributes from the profile being modified using profiles display 134.

As shown in FIG. 14, the program guide may monitor the programs that are being watched by the user by monitoring the user's viewing times, channels, and the frequency with which the programs are watched (step 148). Monitoring the user's behavior in this way

allows the program guide to determine the user's preferences. The program guide may modify the currently active profile based on the programs that are watched at step 150. At step 152, the program guide provides the user with an opportunity to review the automatic profile modifications and to remove or change these modifications. The program guide may also provide the user with the option of disabling the automatic profile modification feature at step 154.

If desired, the user may direct the program guide to generate automatic program reminders for programs that satisfy the criteria in a profile. As shown in FIG. 15, the program guide may provide the option of turning on such an automatic reminders feature at step 156. If the user turns this feature on at step 156, the program guide displays automatic reminder messages on television 48 of FIG. 1 (based on the profile that is currently active) just prior to (e.g., one minute before) the scheduled broadcast times of the programs that satisfy the criteria in the profile (step 158). The program guide may present a "view now" option as part of the reminders screen used to present a reminder to the user. If the user selects the "view now" option, the program guide may tune set-top box 44 to the channel for the program for which the reminder was displayed (step 160).

The program guide may allow new profiles to be created using create profile screen 162 and set up profile screen 164 of FIG. 16. The user may move highlight region 166 between various existing profile options 168 and new profile option 170 using remote control cursor keys. If new profile option 170 is

selected (e.g., by pressing "OK" on the remote control), the program guide presents set up profile screen 164. Set up profile screen 164 allows the user to delete profiles, rename profiles, activate or deactivate a profile, turn the automatic reminders feature on or off, adjust the preference scope for the profile, and to adjust parental control settings. Highlight region 172 may be used to select between these various options. Parental control features that may be provided by the program guide include personal identification number (PIN) features such as activating or deactivating a PIN for a profile, selecting whether changes to preference levels requires a PIN, etc.

The preference criteria selected by a user (e.g., in the form of a preference profile) may be used by the program guide in a number of ways. For example, the program guide may use the preference criteria in a profile to restrict the number of program listings that are presented to the user, regardless of what type of display format the user has chosen to view (e.g., a by-time listing format, a by-channel listing, etc.). This approach may also be used by the program guide to restrict the channels or programs to which the user may tune (either directly or when tuning using a special program guide feature such as a browse feature or a flip feature). Alternatively, the program guide may only use the user's preferences to provide a special "favorites" program list. Another possibility is that the program guide use the preferences in all modes, but only to restrict the movement of the highlight region on the screen, not to eliminate program listings from the user's view.

As shown in FIG. 17, the program guide may provide the user with an opportunity to select a dedicated favorites display format option at step 174. The dedicated favorites display format may be, e.g., a time-ordered list of programs that meet the criteria set forth in the currently active profile. At step 176, the program guide may provide the user with an opportunity to select the favorites always-on display mode in which all display formats and tuning modes are restricted to the programs and channels that satisfy the user's preferences. At step 178, the program guide provides the user with the opportunity to select a display mode in which all programs are displayed, but in which highlight movement is restricted to programs satisfying the user's preferences in the active profile. Alternatively, the display format may be fixed by the program guide and the user not provided with options 174, 176, or 178.

An illustrative arrangement for providing the dedicated favorites display format option is shown in FIG. 18. In the FIG. 18 arrangement, dedicated favorites option 180 is offered as a clickable option at the bottom of a column of display format options 182 in a navigator menu 184. Other options available in navigator menu 184 include special features options 186 (listing of pay-per-view programs organized by time, by title, etc.) and viewer services options 188.

The type of program listings display that may be provided by the program guide when option 180 is selected is shown in FIG. 19 (i.e., following step 174 of FIG. 17). By-time favorites list 190 contains all programs that satisfy the preferences set forth in the

current profile organized in a time-ordered list. The user may select another profile using left and right cursors when highlight region 192 is on profile name region 194. The user may modify the current preference scope using scope option 196.

When the user selects the always-on mode option provided at step 176 of FIG. 17, all of the program listings display formats such as those invoked by options 182 of FIG. 18 are modified to display only those programs that satisfy the user's preferences. For example, selecting by-time option 182 when the always-on mode has been selected results in a by-time favorites display of the type shown in FIG. 19.

In addition, the programs and channels to which the program guide allows the user to tune with set-top box 44 (FIG. 1) are restricted to the programs and channels that satisfy the user's preferences when the always-on mode has been selected. The programs and channels to which the user may tune are also restricted when the user is using special tuning features. For example, the program guide may provide a special "flip" tuning feature. As shown in FIG. 20, when the user invokes the flip mode, flip display 196 is provided over a portion of a channel 198 (i.e., channel 4) that the user is currently tuned to and is watching on display screen 200. Flip display 196 contains information on programs 202 appearing on channel 204. Channel 204 is the same channel (channel 4) as the channel 198 (channel 4) to which the set-top box 44 is currently tuned. The user may change channel 204, e.g., using channel up and down keys on the remote control, which also changes the channel 198. When the

always-on mode has been selected, the channels to which the user may flip are generally restricted to the channels 204 containing programs 202 that satisfy the user's preferences. If desired, the user may be provided with access to any channel, e.g., by allowing the user to enter channel numbers directly.

As shown in FIG. 21, when the user invokes the browse mode, browse display 206 is provided over a portion of a channel 208 (i.e., channel 9) which the user is currently tuned to and is watching on display screen 210. Browse display 206 contains information on programs 212 appearing on different channels 214. The user may change channels 214 using up and down cursor keys without changing channel 208. When the always-on mode has been selected, the channels 214 which the user may browse to are generally restricted to the channels 214 containing programs 212 that satisfy the user's preferences. If desired, the user may be provided with access to any channel, e.g., by allowing the user to enter channel numbers directly.

The restricted highlight movement mode option provided at step 178 of FIG. 17 may be used when the user is viewing a program listings screen such as screen 216 of FIG. 22 by pressing a key such as the favorites key to move highlight region 218 from one program that satisfies the user's preferences (e.g., Dante's Peak) to the next program that satisfies the user's preferences (e.g., ER). The user may be provided with access to all displayed programming (e.g., by allowing the user to press regular up and down cursors to access programs that do not satisfy the user's preferences).

If desired, the favorites key may be used in the flip and browse modes to advance to the next program satisfying the active profile.

FIG. 23 is a flow chart illustrating steps performed by the program guide for each of the FIG. 17 options that may be selected by the user. If option 174 of FIG. 17 is selected, the program guide displays a list of programs that satisfy the criteria in the user's profile in a dedicated favorites by-time ordered list at step 220. If option 176 of FIG. 17 is selected, the program guide restricts the listings and tuning options provided to the user to those programs that satisfy the user's profile, regardless of the particular display mode (e.g., by-time, by-channel, etc.) or tuning mode (e.g., browse, flip, etc.) of the guide at step 222. If option 178 of FIG. 17 is selected, the program guide displays all programs in the desired listings format selected by the user, but restricts highlight movement within those listings to programs that satisfy the user's preferences at step 224.

To accommodate multiple active profiles, the program guide may list programs using different colors, patterns, icons, etc. to distinguish which programs satisfy which profiles. For example, in the by-time listings display of FIG. 24, the programs Seinfeld, Dante's Peak, and ER satisfy the preference criteria in Mike's profile, as indicated by the "M" icons and the use of the red color and first distinct pattern for the cells of the grid for those listings. The programs ER and Football satisfy the preferences in John's profile, as indicated by the "J" icons and the use of the green

color and second distinct pattern for the cells of the grid for those listings. The ER cell contains two colors, two patterns, and two icons indicating that the program ER satisfies the criteria in both Mike's profile and John's profile. Icons, color-coding, and patterns are merely illustrative examples of suitable visual indicators for distinguishing which programs satisfy which profiles. These approaches may be used in any suitable combination or any other suitable approach may be used to distinguish the results satisfying different profiles.

As shown in FIG. 25, a hot list 226 may be provided that contains programs that match the attributes of the active profile. Hot list 226 may be displayed on top of the channel 228 (e.g., channel 7) on display 230 to which the user is currently tuned. The program guide may allow the user to display hot list 226 by pressing a single key on the remote control (e.g., an "OK" key) while watching television. Any programs for which active (non-expired) reminders have been set may be added to the hot list. In the example of FIG. 25, a reminder was set for the 11:00 news, as indicated by reminder icon 232, so the 11:00 news was included in hot list 226. Hot list 226 may be organized in start-time order or any other suitable order. Priority may be given to pay-per-view listings. For example, the program Terminator appears before the program Seinfeld in the hot list arrangement of FIG. 25, because the program Terminator appears on a pay-per-view channel (REQ 1).

After hot list 226 is displayed, the program guide may allow the user to remove hot list 226 by

pressing a single key. The program guide also allows the user to select any of the displayed programs in the list (e.g., using a highlight region) and tunes set-top box to the appropriate channel for the selected program. When there are more programs that satisfy the user's preference profile criteria than will fit on the lower portion of the display, the program guide may allow the user to scroll through the hot list entries. The program guide may remove programs from hot list 226 when they are no longer viewable. Programs may be added to hot list 226 by the program guide when the programs start, or at a specified length of time (e.g., five minutes) prior to the scheduled start time of the program. The program guide may provide the user with an opportunity to select the option of displaying the hot list a short time (e.g., one minute) before the scheduled broadcast time of programs on the list and to adjust this length of time at step 234 of FIG. 26.

If the user chooses to display the hot list sorted by start time, the program guide displays the list in this fashion at step 236 of FIG. 27. If the user chooses to display the hot list sorted by channel, the program guide displays a channel-ordered hot list at step 238. If the user chooses to display the hot list sorted by priority (e.g., with pay-per-view programs listed first), the program guide displays this type of listing at step 240.

Any profile may be assigned a PIN. As shown in FIG. 28, the program guide may provide a personal identification number setup screen 242 that contains a number of user-selectable options regarding PIN usage. For example, PIN setup screen 242 provides an option

244 that allows the user to indicate which profile is being modified. If a PIN has already been established for that profile, the user may be required to enter that PIN at option 246 to continue. If no PIN exists, option 246 may be used to create a new PIN.

Option 248 allows the user to specify whether the PIN is required to activate the profile (e.g., to activate the profile for Joey in the example of FIG. 28). Option 250 allows the user to specify whether the PIN is required for deactivating the profile. Option 252 allows the user to specify whether the PIN is required for viewing profile attributes. Option 254 allows the user to specify whether the PIN is required for adding, deleting, or changing illegal attributes. Option 256 allows the user to specify whether the PIN is required for adding deleting or changing mandatory attributes. Option 258 allows the user to specify whether the PIN is required for adding deleting, or changing likes and dislikes. The options shown in setup screen 242 are illustrative only. For example, if other preference levels are used, options regarding PIN usage for those levels may be provided using screen 242. Any other suitable arrangement may be used by the program guide to allow the user to adjust PIN control levels, if desired.

The arrangement of FIG. 28 allows the user to use PIN controlled profiles for parental control. For example, a parent can set up a child's profile with a restrictive set of preference attributes (e.g., with a mandatory G rating and a preference level of illegal associated with the genre cartoons). By requiring that a PIN be used to deactivate the profile or to change

the preference level attributes, the parent can ensure that the child will only be able to watch G-rated programming and no cartoons when the child's profile is active. A different profile may be created for use when the child's viewing is being closely supervised.

Particularly in situations in which parents wish to set limits on the viewing of their children, it may be desirable to use a master profile that contains settings that override the settings in all other profiles. As shown in FIG. 29, such a master profile may contain illegal preference attributes (e.g., illegal ratings) and mandatory preference attributes. The master profile may also contain other preference settings (e.g., with various preference levels of like, dislike, etc.) The illegal and mandatory attributes of the master profile are controlling. Accordingly, even if profile Joey contains a mandatory R rating setting, the illegal R rating setting in the master profile of FIG. 29 dictates that no R rated programs will be allowed. Similarly, the mandatory English setting in the master profile dictates that English is a required attribute, regardless of the language setting in other profiles. Conflicts between the master profile and other profiles with respect to attributes other than mandatory and illegal attributes may also be resolved in favor of the master profile if desired.

Steps involved in using master profiles are shown in FIG. 30. At step 260, the program guide provides the user with an opportunity to create or modify a master profile. Step 260 typically involves setting up a master PIN that may be used for parental control. At step 262, the program guide may provide

the user with an opportunity to activate the master profile. One or more other profile may also be activated at step 262. Typically, the master PIN is used to activate the master profile. Because the master PIN is generally not known by children, the master PIN provides parents with global control over programming. If desired, once the master PIN has been set up in the system, entering the master PIN may allow the user to modify the profiles of their children.

As step 264, the program guide resolves conflicts between the preference criteria in the various profiles in favor of the master profile. After (or at the same time) such conflicts are resolved, the program guide may display a list of programming or allow tuning to certain channels based on the criteria in the active profiles at step 266.

If desired, the program guide may provide an opportunity for the user to select whether the program titles, descriptions, etc. for programs that do not satisfy a given preference profile should be hidden from view. This feature is useful in situations in which a pareent not only wishes to restrict the viewing options of a child, but also wishes to prevent the child from being able to view information on programming that does not satisfy a given profile (e.g., the master profile). When the user directs the program guide to block the titles and descriptions for programs that do not satisfy the profile, the program guide may display a message such as "restricted" on various program guide display screens in place of the program listings for the blocked programs. The option of replacing non-favorite program listings with a

"restricted" message may be placed inder master PIN control.

Another feature provided by the program guide relates to profile settings for non-program items. For example, a profile setting may be used to define various audio settings 268 for user television equipment 40 (stereo, mono, Dolby on/off, bass and treble settings, etc.), as shown in FIG. 31. Display settings 270 such as brightness, contrast, the language of the text displayed in the program guide, etc. may also be associated with a given profile (e.g., the profile "Mike"). Audio settings 268 and display settings 270 are examples of non-program settings that may be associated with a profile. If desired, other suitable non-program settings may also be associated with a profile.

As shown in FIG. 32, the program guide may provide the user with an opportunity for setting program settings (preference attributes, preference levels, preference scope, etc.) for a given profile at step 272. At step 274, the program guide may provide the user with an opportunity to set non-program settings associated with that profile. At step 276, the program guide may provide an opportunity to activate the profile. At step 278, the user television equipment and the program guide are operated using the non-program settings.

Because the program guide knows which profile is active (e.g., Mike or Joey, etc.) at a given time, the program guide may use this information in providing various services. For example, the program guide may provide access to a program guide e-mail service or

other messaging service using information about which profile is currently active (step 280). This allows a user to access e-mail, for example, without having to separately log into the e-mail service. If Mike's profile is currently active, the program guide can retrieve messages addressed to Mike. If Joey's profile is active, the program guide can provide access to Joey's messages. If more than one profile is active, the program guide can provide access to the messaging service to the users of all active profiles or may require that each user log in separately.

The foregoing is merely illustrative of the principles of this invention and various modifications can be made by those skilled in the art without departing from the scope and spirit of the invention.

What is Claimed is:

1. A television program guide system implemented on user television equipment, comprising:

means for providing an option for a user to select a plurality of preference attributes that are indicative of the user's television programming interests;

means for providing an option for the user to select one of at least several preference levels for each of the plurality of selected preference attributes; and

means for displaying a list of programming based on the selected preference attributes and selected preference levels.

2. The television program guide system defined in claim 1 further comprising means for providing an option of creating a preference profile with which the selected preference attributes and the selected preference levels are associated.

3. The television program guide system defined in claim 2 further comprising means for providing an option of selecting a preference scope that is associated with the preference profile.

4. The television program guide system defined in claim 2 wherein there are multiple profiles, the system further comprising means for providing an option of selecting which of the profiles to make active.

5. The television program guide system defined in claim 4 further comprising means for turning on an auto-reminders feature.

6. The television program guide system defined in claim 5 wherein a given one of the profiles is active, the system further comprising means for displaying automatic reminders when the auto-reminders feature is turned on based on the active profile just prior to the scheduled broadcast times of programs satisfying the active profile.

7. The television program guide system defined in claim 6 further comprising:

means for providing a view now option for programs for which automatic reminders are displayed; and

means for tuning to a given one of the programs for which the automatic reminders are displayed when the user selects the view now option for that program.

8. The television program guide system defined in claim 2 wherein at least two of the preference profiles are active and wherein the means for displaying displays the list of programming based on the selected preference attributes and selected preference levels in the two preference profiles, the system further comprising means for indicating which of the programs in the list of programming satisfy which of the preference profiles.

9. The television program guide system defined in claim 8 wherein the means for indicating comprises means for listing the programs that satisfy one of the two profiles using one color and the programs that satisfy the other of the two profiles using another color.

10. The television program guide system defined in claim 8 wherein the means for indicating comprises means for listing the programs that satisfy one of the two profiles using one pattern and the programs that satisfy the other of the two profiles using another pattern.

11. The television program guide system defined in claim 8 wherein the means for indicating comprises means for listing the programs that satisfy one of the two profiles using one icon and the programs that satisfy the other of the two profiles using another icon.

12. The television program guide system defined in claim 4 wherein the means for displaying the list of programming based on the selected preference attributes and selected preference levels further comprises means for displaying the list of programming based on the selected preference attributes and selected preference levels associated with the multiple profiles.

13. The television program guide system defined in claim 4 further comprising means for

allowing tuning to certain channels based on the selected preference attributes and selected preference levels associated with the multiple profiles.

14. The television program guide system defined in claim 2 further comprising means for allowing the user to tune to a selected program, wherein the means for providing the option of creating the preference profile further comprises means for creating the preference profile based on characteristics of the selected program.

15. The television program guide system defined in claim 14 wherein the means for creating the preference profile based on the characteristics of the selected program further comprises means for creating the preference profile based on the title of the selected program.

16. The television program guide system defined in claim 14 wherein the means for creating the preference profile based on the characteristics of the selected program further comprises means for creating the preference profile based on the genre of the selected program.

17. The television program guide system defined in claim 14 wherein the means for creating the preference profile based on the characteristics of the selected program further comprises means for creating the preference profile based on the channel of the selected program.

18. The television program guide system defined in claim 14 wherein the means for creating the preference profile based on the characteristics of the selected program further comprises means for creating the preference profile based on the rating of the selected program.

19. The television program guide system defined in claim 2 further comprising means for allowing the user to highlight a given program listing, wherein the means for providing the option of creating the preference profile further comprises means for creating the preference profile based on characteristics of the highlighted program listing.

20. The television program guide system defined in claim 19 wherein the means for creating the preference profile based on the characteristics of the highlighted program listing further comprises means for creating the preference profile based on the title of the highlighted program listing.

21. The television program guide system defined in claim 19 wherein the means for creating the preference profile based on the characteristics of the highlighted program listing further comprises means for creating the preference profile based on the genre of the highlighted program listing.

22. The television program guide system defined in claim 19 wherein the means for creating the preference profile based on the characteristics of the

highlighted program listing further comprises means for creating the preference profile based on the channel of the highlighted program listing.

23. The television program guide system defined in claim 19 wherein the means for creating the preference profile based on the characteristics of the highlighted program listing further comprises means for creating the preference profile based on the rating of the highlighted program listing.

24. The television program guide system defined in claim 1 further comprising:

means for allowing the user to tune to a selected program; and

means for modifying a preference profile with which the selected preference attributes and the selected preference levels are associated based on the characteristics of the selected program.

25. The television program guide system defined in claim 1 further comprising:

means for allowing the user to highlight a given program listing; and

means for modifying a preference profile with which the selected preference attributes and the selected preference levels are associated based on the characteristics of the highlighted program listing.

26. The television program guide system defined in claim 1 further comprising means for providing a profiles display with which the user may

modify a preference profile with which the selected preference attributes and the selected preference levels are associated.

27. The television program guide system defined in claim 2 further comprising means for providing a hot list of programs satisfying the preference profile.

28. The television program guide system defined in claim 27 further comprising means for providing an option for displaying the hot list a short time before the scheduled broadcast times of programs on the hot list and for adjusting this time.

29. The television program guide system defined in claim 27 wherein the means for providing the hot list further comprises means for providing the hot list sorted by start time.

30. The television program guide system defined in claim 27 wherein the means for providing the hot list further comprises means for providing the hot list sorted by channel.

31. The television program guide system defined in claim 28 wherein the means for providing the hot list further comprises means for providing the hot list sorted by priority.

32. The television program guide system defined in claim 31 wherein the means for providing the

hot list sorted by priority further comprises means for providing the hot list with pay-per-view programming having highest priority and being listed first.

33. The television program guide system defined in claim 1 further comprising means for allowing tuning to certain channels based on the selected preference attributes and selected preference levels.

34. The television program guide system defined in claim 33 further comprising means for providing an option of specifying a sort order for each of the selected preference attributes.

35. The television program guide system defined in claim 34 further comprising means for allowing tuning to certain channels based on the specified sort order.

36. The television program guide system defined in claim 1 further comprising means for monitoring which programs are watched by the user.

37. The television program guide system defined in claim 36 wherein the means for monitoring which programs are watched by the user further comprises means for monitoring viewing times, channels, and frequencies.

38. The television program guide system defined in claim 36 further comprising means for

automatically modifying a preference profile with which the selected preference attributes and the selected preference levels are associated based on which programs are watched by the user.

39. The television program guide system defined in claim 38 further comprising means for providing an opportunity to review and modify automatic profile modifications made by the means for automatically modifying.

40. The television program guide system defined in claim 38 further comprising means for disabling the means for automatically modifying.

41. The television program guide system defined in claim 1 further comprising means for providing a personal identification number setup screen.

42. The television program guide system defined in claim 41 wherein the means for providing the personal identification number setup screen further comprises means for providing a plurality of personal identification number options associated with a preference profile with which the selected preference attributes and the selected preference levels are associated.

43. The television program guide system defined in claim 42 wherein the means for providing the personal identification number options further

comprises means for setting whether a personal identification number is required for activating the profile.

44. The television program guide system defined in claim 42 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for deactivating the profile.

45. The television program guide system defined in claim 42 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for viewing which preference attributes are associated with the profile.

46. The television program guide system defined in claim 42 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for modifying which preference attributes have an associated preference level of illegal.

47. The television program guide system defined in claim 42 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for modifying which

preference attributes have an associated preference level of mandatory.

48. The television program guide system defined in claim 42 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for modifying like and dislike preference levels.

49. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given airing of a program as a preference attribute.

50. The television program guide system defined in claim 49 further comprising means for allowing the given airing of the program selected as a preference attribute to expire after the program has been aired.

51. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a broadcast characteristic as a preference attribute.

52. The television program guide system defined in claim 51 wherein the means for providing the

option of selecting a broadcast characteristic as a preference attribute further comprises means for providing closed-captioning as a preference attribute.

53. The television program guide system defined in claim 51 wherein the means for providing the option of selecting a broadcast characteristic as a preference attribute further comprises means for providing second audio program as a preference attribute.

54. The television program guide system defined in claim 1 further comprising means for providing an option of specifying a sort order for each of the selected preference attributes.

55. The television program guide system defined in claim 54 further comprising means for displaying the list of programming based on the specified sort order.

56. The television program guide system defined in claim 1 further comprising means for providing the user with an option of selecting a preference scope.

57. The television program guide system defined in claim 56 further comprising means for displaying the list of programming based on the selected preference scope.

58. The television program guide system defined in claim 56 further comprising means for allowing tuning to certain channels based on the selected preference scope.

59. The television program guide system defined in claim 56 wherein the means for providing the user with the option of selecting the preference scope further comprises means for selecting a preference scope selected from the group consisting of: narrow scope, moderate scope, and wide scope.

60. The television program guide system defined in claim 56 wherein the preference levels include like, dislike, illegal, and mandatory, and wherein the means for providing the user with the option of selecting the preference scope further comprises means for selecting a preference scope that includes liked programs that are not more disliked and that have all mandatory attributes and no illegal attributes.

61. The television program guide system defined in claim 56 wherein the preference levels include like, dislike, illegal, and mandatory, and wherein the means for providing the user with the option of selecting the preference scope further comprises means for selecting a preference scope that includes programs that have no disliked preference attributes and that have all mandatory attributes and no illegal attributes.

62. The television program guide system defined in claim 56 wherein the preference levels include like, dislike, illegal, and mandatory, and wherein the means for providing the user with the option of selecting the preference scope further comprises means for selecting a preference scope that includes programs that have all mandatory attributes and no illegal attributes.

63. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a type of channel as a preference attribute.

64. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a program series as a preference attribute.

65. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a genre of programming as a preference attribute.

66. The television program guide system defined in claim 1 wherein the means for providing the

option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting at least one rating as a preference attribute.

67. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given actor or actress as a preference attribute.

68. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given topic as a preference attribute.

69. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a word in a program description as a preference attribute.

70. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given program start time as a preference attribute.

71. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a range of broadcast times as a preference attribute.

72. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting original programming as a preference attribute.

73. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given language as a preference attribute.

74. The television program guide system defined in claim 1 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a critics rating as a preference attribute.

75. The television program guide system defined in claim 1 further comprising means for providing an option of deselecting at least one of the selected preference attributes.

76. The television program guide system defined in claim 1 wherein the preference levels include at least like and dislike.

77. The television program guide system defined in claim 1 wherein the preference levels include at least strong like and weak like.

78. The television program guide system defined in claim 1 wherein the preference levels include at least strong dislike and weak dislike.

79. The television program guide system defined in claim 1 further comprising means for providing an opportunity to select a dedicated favorites by-time display format option with which the list of programming is displayed.

80. The television program guide system defined in claim 1 further comprising means for providing an opportunity to select a favorites always-on display mode option.

81. The television program guide system defined in claim 1 further comprising means for providing an opportunity to select a display mode in which all programs are displayed but in which highlight movement is restricted to programs satisfying a preference profile with which the selected preference attributes and the selected preference levels are associated.

82. The television program guide system defined in claim 1 further comprising means for providing a flip feature that can be tuned only to programs satisfying a preference profile with which the selected preference attributes and the selected preference levels are associated.

83. The television program guide system defined in claim 1 further comprising means for providing a browse feature that can be tuned only to programs satisfying a preference profile with which the selected preference attributes and the selected preference levels are associated.

84. The television program guide system defined in claim 1 further comprising means for providing an option for creating a master preference profile.

85. The television program guide system defined in claim 1 wherein a plurality of preference profiles including a master preference profile are active, the system further comprising means for resolving conflicts between preference profiles in favor of the master preference profile.

86. The television program guide system defined in claim 1 wherein a master preference profile that is accessed by a master personal identification number is used to define certain television viewing preferences, the system further comprising means for

displaying the list of programming based on the master profile.

87. The television program guide system defined in claim 1 wherein a master preference profile that is accessed by a master personal identification number is used to define certain television viewing preferences, the means for displaying the list of programming further comprising means for displaying the list of programming based on selected preference attributes and selected preference levels in the master profile.

88. The television program guide system defined in claim 1 further comprising:

means for providing an option of creating a preference profile with which the selected preference attributes and the selected preference levels are associated; and

means for providing an opportunity for setting non-program settings associated with the preference profile.

89. The television program guide system defined in claim 1 further comprising:

means for providing an option of creating a preference profile with which the selected preference attributes and the selected preference levels are associated; and

means for providing an opportunity for setting non-program settings associated with the preference profile, wherein the non-program settings

include audio settings for the user television equipment.

90. The television program guide system defined in claim 1 further comprising:

means for providing an option of creating a preference profile with which the selected preference attributes and the selected preference levels are associated; and

means for providing an opportunity for setting non-program settings associated with the preference profile, wherein the non-program settings include display settings.

91. The television program guide system defined in claim 1 further comprising:

means for providing an opportunity for creating multiple preference profiles, each of which has an associated set of selected preference attributes and selected preference levels;

means for providing an option of selecting which of the profiles to make active; and

means for providing access to a messaging service based on information on which profile is active.

92. A television program guide system implemented on user television equipment, comprising:

means for providing an option for a user to select a plurality of preference attributes that are indicative of the user's television programming interests;

means for providing an option for the user to select one of at least several preference levels for each of the plurality of selected preference attributes; and

means for allowing tuning to certain channels based on the selected preference attributes and selected preference levels.

93. The television program guide system defined in claim 92 further comprising means for providing an option of creating a preference profile with which the selected preference attributes and the selected preference levels are associated.

94. The television program guide system defined in claim 93 further comprising means for providing an option of selecting a preference scope that is associated with the preference profile.

95. The television program guide system defined in claim 93 wherein there are multiple profiles, the system further comprising means for providing an option of selecting which of the profiles to make active.

96. The television program guide system defined in claim 95 further comprising means for turning on an auto-reminders feature.

97. The television program guide system defined in claim 96 wherein a given one of the profiles is active, the system further comprising means for

displaying automatic reminders when the auto-reminders feature is on based on the active profile just prior to the scheduled broadcast times of programs satisfying the active profile.

98. The television program guide system defined in claim 97 further comprising:

means for providing a view now option for programs for which automatic reminders are displayed; and

means for tuning to a given one of the programs for which the automatic reminders are displayed when the user selects the view now option for that program.

99. The television program guide system defined in claim 93 wherein at least two of the preference profiles are active, the system further comprising:

means for displaying a list of programming based on the selected preference attributes and selected preference levels in the two preference profiles; and

means for indicating which of the programs in the list of programming satisfy which of the preference profiles.

100. The television program guide system defined in claim 99 wherein the means for indicating comprises means for listing the programs that satisfy one of the two profiles using one color and the

programs that satisfy the other of the two profiles using another color.

101. The television program guide system defined in claim 99 wherein the means for indicating comprises means for listing the programs that satisfy one of the two profiles using one pattern and the programs that satisfy the other of the two profiles using another pattern.

102. The television program guide system defined in claim 99 wherein the means for indicating comprises means for listing the programs that satisfy one of the two profiles using one icon and the programs that satisfy the other of the two profiles using another icon.

103. The television program guide system defined in claim 95 further comprising means for displaying a list of programming based on the selected preference attributes and selected preference levels associated with the multiple profiles.

104. The television program guide system defined in claim 95 wherein the means for allowing tuning to certain channels based on the selected preference attributes and selected preference levels further comprises means for allowing tuning to certain channels based on the selected preference attributes and selected preference levels associated with the multiple profiles.

105. The television program guide system defined in claim 93 further comprising means for allowing the user to tune to a selected program, wherein the means for providing the option of creating the preference profile further comprises means for creating the preference profile based on characteristics of the selected program.

106. The television program guide system defined in claim 105 wherein the means for creating the preference profile based on the characteristics of the selected program further comprises means for creating the preference profile based on the title of the selected program.

107. The television program guide system defined in claim 105 wherein the means for creating the preference profile based on the characteristics of the selected program further comprises means for creating the preference profile based on the genre of the selected program.

108. The television program guide system defined in claim 105 wherein the means for creating the preference profile based on the characteristics of the selected program further comprises means for creating the preference profile based on the channel of the selected program.

109. The television program guide system defined in claim 105 wherein the means for creating the preference profile based on the characteristics of the

selected program further comprises means for creating the preference profile based on the rating of the selected program.

110. The television program guide system defined in claim 93 further comprising means for allowing the user to highlight a given program listing, wherein the means for providing the option of creating the preference profile further comprises means for creating the preference profile based on characteristics of the highlighted program listing.

111. The television program guide system defined in claim 110 wherein the means for creating the preference profile based on the characteristics of the highlighted program listing further comprises means for creating the preference profile based on the title of the highlighted program listing.

112. The television program guide system defined in claim 110 wherein the means for creating the preference profile based on the characteristics of the highlighted program listing further comprises means for creating the preference profile based on the genre of the highlighted program listing.

113. The television program guide system defined in claim 110 wherein the means for creating the preference profile based on the characteristics of the highlighted program listing further comprises means for creating the preference profile based on the channel of the highlighted program listing.

114. The television program guide system defined in claim 110 wherein the means for creating the preference profile based on the characteristics of the highlighted program listing further comprises means for creating the preference profile based on the rating of the highlighted program listing.

115. The television program guide system defined in claim 92 further comprising:

means for allowing the user to tune to a selected program; and

means for modifying a preference profile with which the selected preference attributes and the selected preference levels are associated based on the characteristics of the selected program.

116. The television program guide system defined in claim 92 further comprising:

means for allowing the user to highlight a given program listing; and

means for modifying a preference profile with which the selected preference attributes and the selected preference levels are associated based on the characteristics of the highlighted program listing.

117. The television program guide system defined in claim 92 further comprising means for providing a profiles display with which the user may modify a preference profile with which the selected preference attributes and the selected preference levels are associated.

118. The television program guide system defined in claim 93 further comprising means for providing a hot list of programs satisfying the preference profile.

119. The television program guide system defined in claim 118 further comprising means for providing an option for displaying the hot list a short time before the scheduled broadcast times of programs on the hot list and for adjusting this time.

120. The television program guide system defined in claim 118 wherein the means for providing the hot list further comprises means for providing the hot list sorted by start time.

121. The television program guide system defined in claim 118 wherein the means for providing the hot list further comprises means for providing the hot list sorted by channel.

122. The television program guide system defined in claim 118 wherein the means for providing the hot list further comprises means for providing the hot list sorted by priority.

123. The television program guide system defined in claim 122 wherein the means for providing the hot list sorted by priority further comprises means for providing the hot list with pay-per-view programming having highest priority and being listed first.

124. The television program guide system defined in claim 92 further comprising means for monitoring which programs are watched by the user.

125. The television program guide system defined in claim 124 wherein the means for monitoring which programs are watched by the user further comprises means for monitoring viewing times, channels, and frequencies.

126. The television program guide system defined in claim 124 further comprising means for automatically modifying a preference profile with which the selected preference attributes and the selected preference levels are associated based on which programs are watched by the user.

127. The television program guide system defined in claim 126 further comprising means for providing an opportunity to review and modify automatic profile modifications made by the means for automatically modifying.

128. The television program guide system defined in claim 126 further comprising means for disabling the means for automatically modifying.

129. The television program guide system defined in claim 92 further comprising means for providing a personal identification number setup screen.

130. The television program guide system defined in claim 129 wherein the means for providing the personal identification number setup screen further comprises means for providing a plurality of personal identification number options associated with a preference profile with which the selected preference attributes and the selected preference levels are associated.

131. The television program guide system defined in claim 130 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for activating the profile.

132. The television program guide system defined in claim 130 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for deactivating the profile.

133. The television program guide system defined in claim 130 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for viewing which preference attributes are associated with the profile.

134. The television program guide system defined in claim 130 wherein the means for providing

the personal identification number options further comprises means for setting whether a personal identification number is required for modifying which preference attributes have an associated preference level of illegal.

135. The television program guide system defined in claim 130 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for modifying which preference attributes have an associated preference level of mandatory.

136. The television program guide system defined in claim 130 wherein the means for providing the personal identification number options further comprises means for setting whether a personal identification number is required for modifying like and dislike preference levels.

137. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given airing of a program as a preference attribute.

138. The television program guide system defined in claim 137 further comprising means for allowing the given airing of the program selected as a

preference attribute to expire after the program has been aired.

139. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a broadcast characteristic as a preference attribute.

140. The television program guide system defined in claim 139 wherein the means for providing the option of selecting a broadcast characteristic as a preference attribute further comprises means for providing closed-captioning as a preference attribute.

141. The television program guide system defined in claim 139 wherein the means for providing the option of selecting a broadcast characteristic as a preference attribute further comprises means for providing second audio program as a preference attribute.

142. The television program guide system defined in claim 92 further comprising means for providing an option of specifying a sort order for each of the selected preference attributes.

143. The television program guide system defined in claim 142 wherein the means for allowing tuning to certain channels based on the selected preference attributes and selected preference levels

further comprises means for allowing tuning to certain channels based on the specified sort order.

144. The television program guide system defined in claim 142 further comprising:

means for displaying a list of programming based on the selected preference attributes and selected preference levels; and

means for displaying the list of programming based on the specified sort order.

145. The television program guide system defined in claim 92 further comprising means for providing the user with an option of selecting a preference scope.

146. The television program guide system defined in claim 145 further comprising:

means for displaying a list of programming based on the selected preference attributes and selected preference levels; and

means for displaying the list of programming based on the selected preference scope.

147. The television program guide system defined in claim 145 wherein the means for allowing tuning to certain channels based on the selected preference attributes and selected preference levels further comprises means for allowing tuning to certain channels based on the selected preference scope.

148. The television program guide system defined in claim 145 wherein the means for providing the user with the option of selecting the preference scope further comprises means for selecting a preference scope selected from the group consisting of: narrow scope, moderate scope, and wide scope.

149. The television program guide system defined in claim 145 wherein the preference levels include like, dislike, illegal, and mandatory, and wherein the means for providing the user with the option of selecting the preference scope further comprises means for selecting a preference scope that includes liked programs that are not more disliked and that have all mandatory attributes and no illegal attributes.

150. The television program guide system defined in claim 145 wherein the preference levels include like, dislike, illegal, and mandatory, and wherein the means for providing the user with the option of selecting the preference scope further comprises means for selecting a preference scope that includes programs that have no disliked preference attributes and that have all mandatory attributes and no illegal attributes.

151. The television program guide system defined in claim 145 wherein the preference levels include like, dislike, illegal, and mandatory, and wherein the means for providing the user with the option of selecting the preference scope further

comprises means for selecting a preference scope that includes programs that have all mandatory attributes and no illegal attributes.

152. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a type of channel as a preference attribute.

153. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a program series as a preference attribute.

154. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a genre of programming as a preference attribute.

155. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting at least one rating as a preference attribute.

156. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given actor or actress as a preference attribute.

157. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given topic as a preference attribute.

158. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a word in a program description as a preference attribute.

159. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given program start time as a preference attribute.

160. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an

option of selecting a range of broadcast times as a preference attribute.

161. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting original programming as a preference attribute.

162. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a given language as a preference attribute.

163. The television program guide system defined in claim 92 wherein the means for providing the option for the user to select a plurality of preference attributes further comprises means for providing an option of selecting a critics rating as a preference attribute.

164. The television program guide system defined in claim 92 further comprising means for providing an option of deselecting at least one of the selected preference attributes.

165. The television program guide system defined in claim 92 wherein the preference levels include at least like and dislike.

166. The television program guide system defined in claim 92 wherein the preference levels include at least strong like and weak like.

167. The television program guide system defined in claim 92 wherein the preference levels include at least strong dislike and weak dislike.

168. The television program guide system defined in claim 92 further comprising means for providing an opportunity to select a favorites by-time display format option with which the list of programming is displayed.

169. The television program guide system defined in claim 92 further comprising means for providing an opportunity to select a favorites always-on display mode option.

170. The television program guide system defined in claim 92 further comprising:

means for displaying a list of programming based on the selected preference attributes and selected preference levels; and

means for providing an opportunity to select a display mode in which all programs are displayed but in which highlight movement is restricted to programs satisfying a preference profile with which the selected preference attributes and the selected preference levels are associated.

171. The television program guide system defined in claim 92 further comprising means for providing a flip feature that can be tuned only to programs satisfying a preference profile with which the selected preference attributes and the selected preference levels are associated.

172. The television program guide system defined in claim 92 further comprising means for providing a browse feature that can be tuned only to programs satisfying a preference profile with which the selected preference attributes and the selected preference levels are associated.

173. The television program guide system defined in claim 92 further comprising means for providing an option for creating a master preference profile.

174. The television program guide system defined in claim 92 wherein a plurality of preference profiles including a master preference profile are active, the system further comprising means for resolving conflicts between preference profiles in favor of the master preference profile.

175. The television program guide system defined in claim 92 wherein a master preference profile that is accessed by a master personal identification number is used to define certain television viewing preferences, the system further comprising means for

displaying the list of programming based on the master profile.

176. The television program guide system defined in claim 92 wherein a master preference profile that is accessed by a master personal identification number is used to define certain television viewing preferences, the means for displaying the list of programming further comprising means for displaying the list of programming based on selected preference attributes and selected preference levels in the master profile.

177. The television program guide system defined in claim 92 further comprising:

means for providing an option of creating a preference profile with which the selected preference attributes and the selected preference levels are associated; and

means for providing an opportunity for setting non-program settings associated with the preference profile.

178. The television program guide system defined in claim 92 further comprising:

means for providing an option of creating a preference profile with which the selected preference attributes and the selected preference levels are associated; and

means for providing an opportunity for setting non-program settings associated with the preference profile, wherein the non-program settings

include audio settings for the user television equipment.

179. The television program guide system defined in claim 92 further comprising:

means for providing an option of creating a preference profile with which the selected preference attributes and the selected preference levels are associated; and

means for providing an opportunity for setting non-program settings associated with the preference profile, wherein the non-program settings include display settings.

180. The television program guide system defined in claim 92 further comprising:

means for providing an opportunity for creating multiple preference profiles, each of which has an associated set of selected preference attributes and selected preference levels;

means for providing an option of selecting which of the profiles to make active; and

means for providing access to a messaging service based on information on which profile is active.

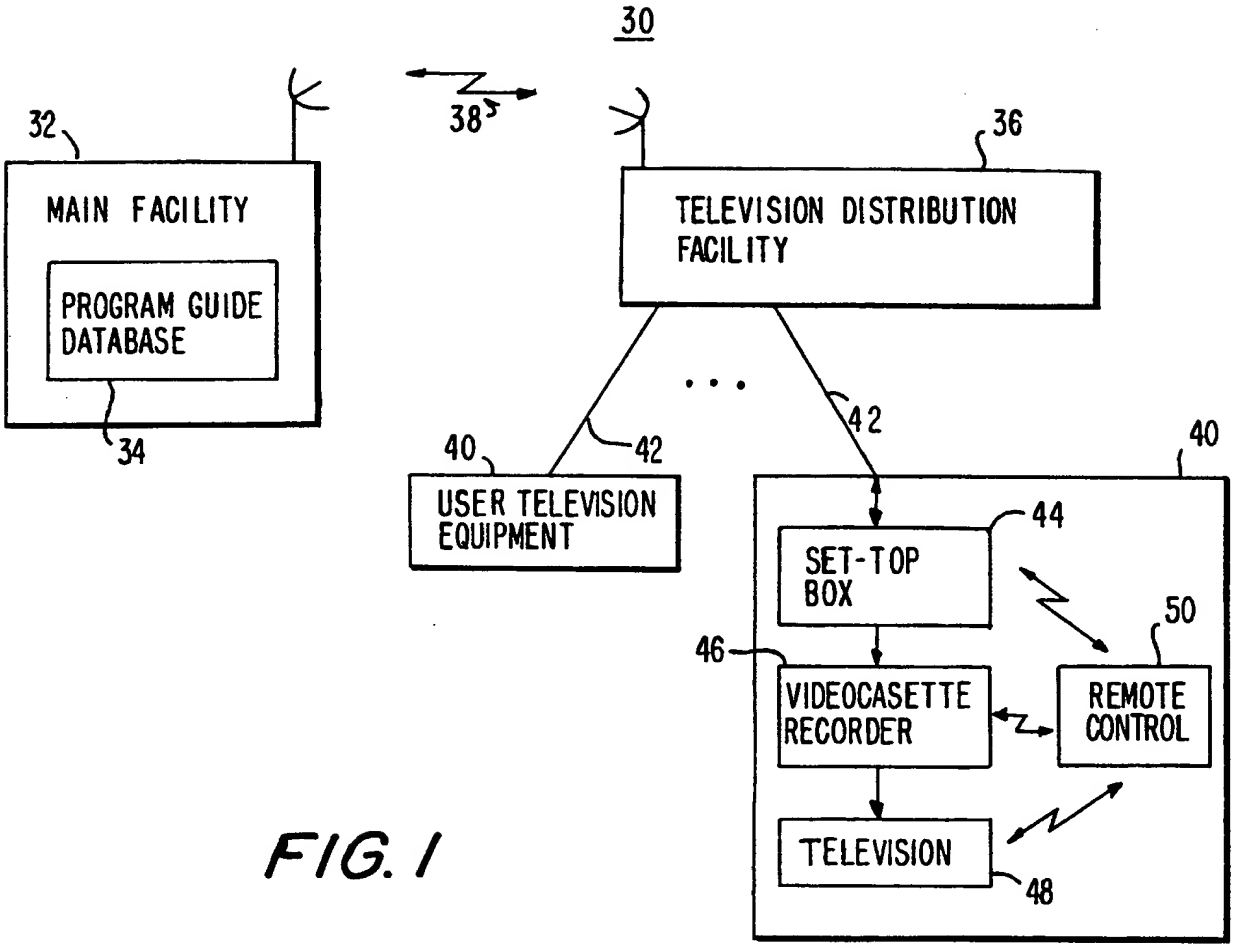

30
32
38
36
MAIN FACILITY
PROGRAM GUIDE DATABASE
34
TELEVISION DISTRIBUTION FACILITY
42
40
42
40
USER TELEVISION EQUIPMENT
44
SET-TOP BOX
50
46
VIDEOCASETTE RECORDER
REMOTE CONTROL
TELEVISION
48

FIG. 1

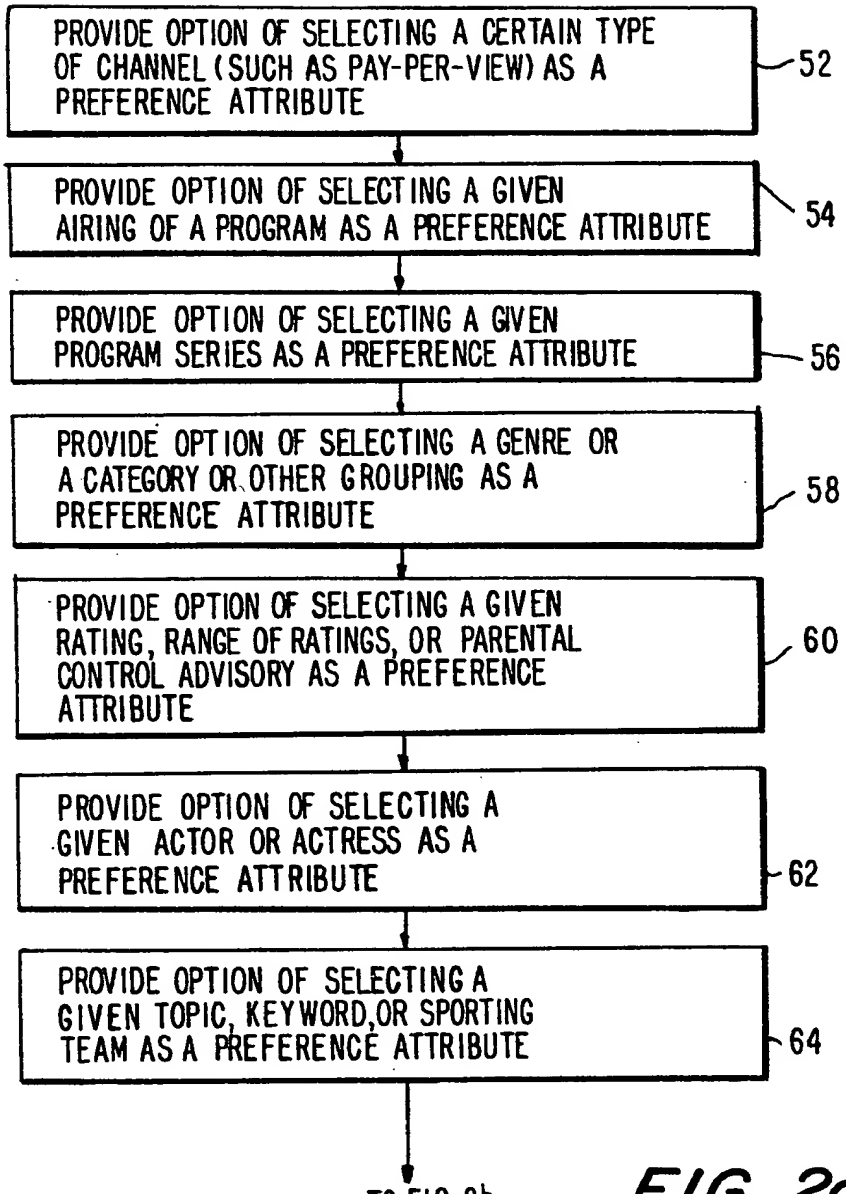

PROVIDE OPTION OF SELECTING A CERTAIN TYPE OF CHANNEL (SUCH AS PAY-PER-VIEW) AS A PREFERENCE ATTRIBUTE
52
PROVIDE OPTION OF SELECTING A GIVEN AIRING OF A PROGRAM AS A PREFERENCE ATTRIBUTE
54
PROVIDE OPTION OF SELECTING A GIVEN PROGRAM SERIES AS A PREFERENCE ATTRIBUTE
56
PROVIDE OPTION OF SELECTING A GENRE OR A CATEGORY OR OTHER GROUPING AS A PREFERENCE ATTRIBUTE
58
PROVIDE OPTION OF SELECTING A GIVEN RATING, RANGE OF RATINGS, OR PARENTAL CONTROL ADVISORY AS A PREFERENCE ATTRIBUTE
60
PROVIDE OPTION OF SELECTING A GIVEN ACTOR OR ACTRESS AS A PREFERENCE ATTRIBUTE
62
PROVIDE OPTION OF SELECTING A GIVEN TOPIC, KEYWORD, OR SPORTING TEAM AS A PREFERENCE ATTRIBUTE
64
TO FIG. 2b

FIG. 2a

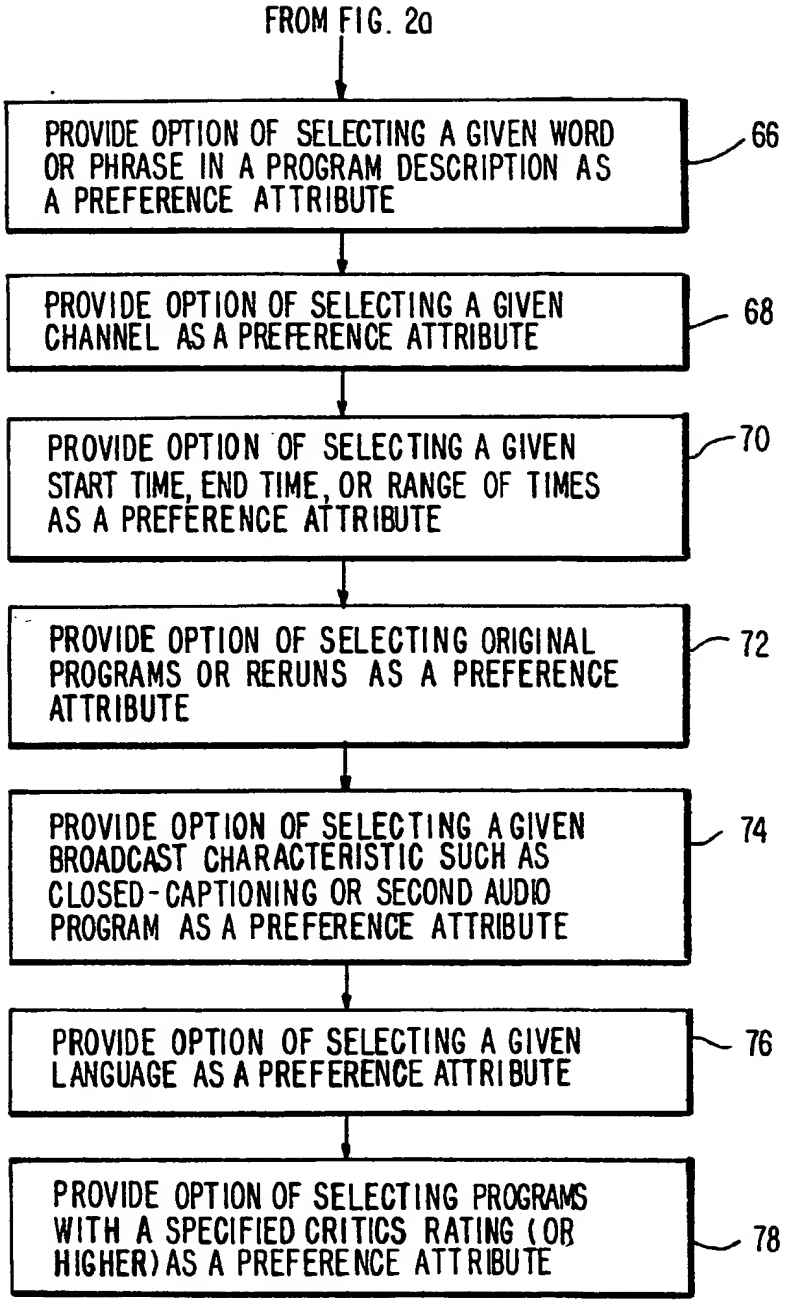

FROM FIG. 2a
PROVIDE OPTION OF SELECTING A GIVEN WORD OR PHRASE IN A PROGRAM DESCRIPTION AS A PREFERENCE ATTRIBUTE
66
PROVIDE OPTION OF SELECTING A GIVEN CHANNEL AS A PREFERENCE ATTRIBUTE
68
PROVIDE OPTION OF SELECTING A GIVEN START TIME, END TIME, OR RANGE OF TIMES AS A PREFERENCE ATTRIBUTE
70
PROVIDE OPTION OF SELECTING ORIGINAL PROGRAMS OR RERUNS AS A PREFERENCE ATTRIBUTE
72
PROVIDE OPTION OF SELECTING A GIVEN BROADCAST CHARACTERISTIC SUCH AS CLOSED-CAPTIONING OR SECOND AUDIO PROGRAM AS A PREFERENCE ATTRIBUTE
74
PROVIDE OPTION OF SELECTING A GIVEN LANGUAGE AS A PREFERENCE ATTRIBUTE
76
PROVIDE OPTION OF SELECTING PROGRAMS WITH A SPECIFIED CRITICS RATING (OR HIGHER) AS A PREFERENCE ATTRIBUTE
78

FIG. 2b

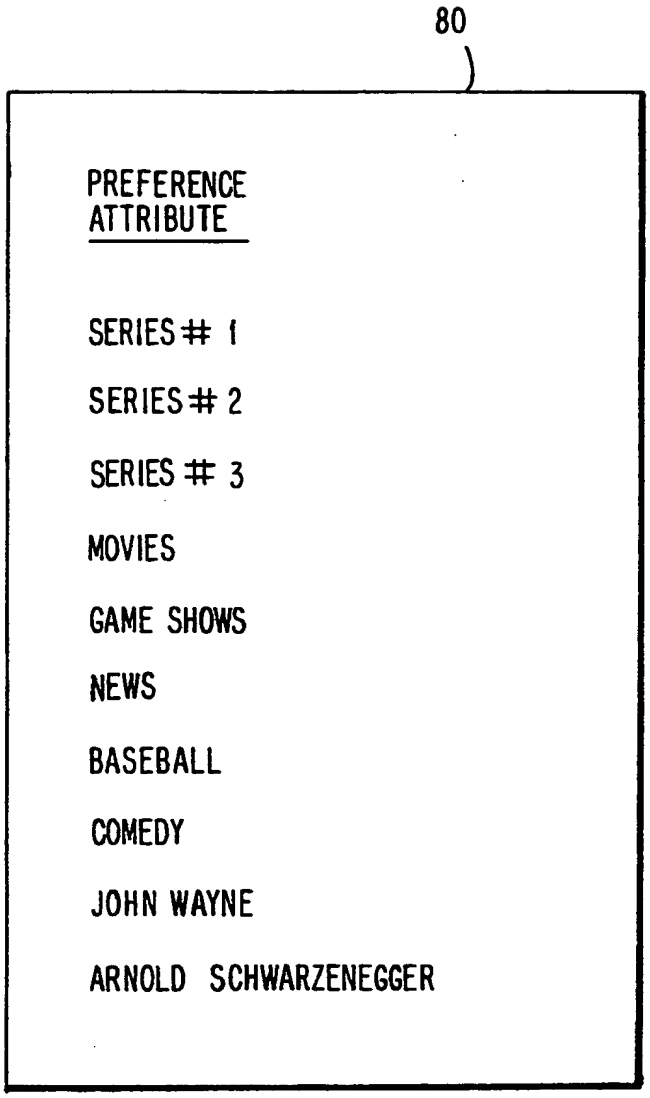

80
PREFERENCE ATTRIBUTE
SERIES # 1
SERIES # 2
SERIES # 3
MOVIES
GAME SHOWS
NEWS
BASEBALL
COMEDY
JOHN WAYNE
ARNOLD SCHWARZENEGGER

FIG. 3

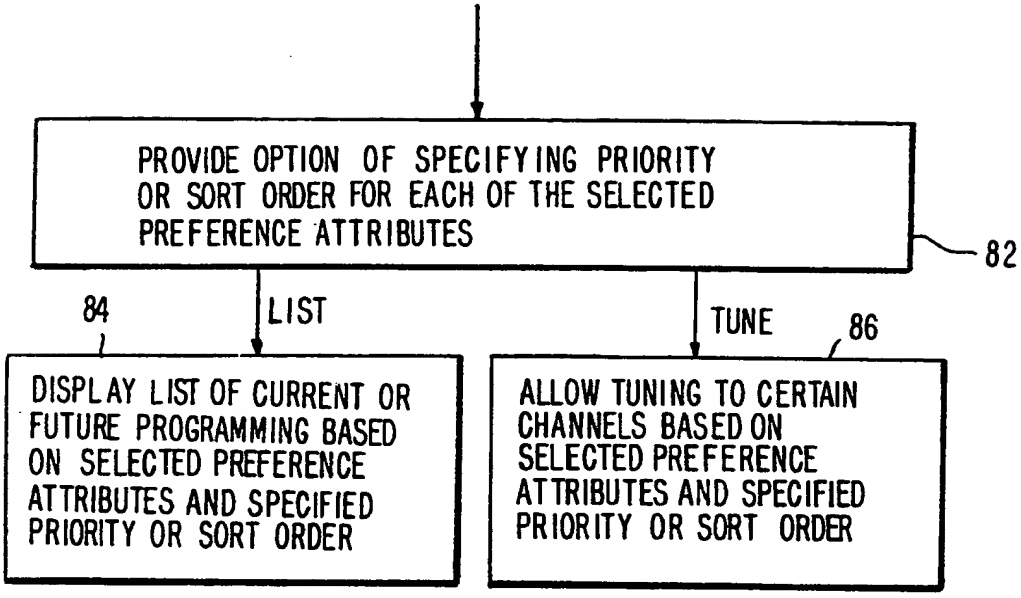

PROVIDE OPTION OF SPECIFYING PRIORITY OR SORT ORDER FOR EACH OF THE SELECTED PREFERENCE ATTRIBUTES
82
84
LIST
TUNE
86
DISPLAY LIST OF CURRENT OR FUTURE PROGRAMMING BASED ON SELECTED PREFERENCE ATTRIBUTES AND SPECIFIED PRIORITY OR SORT ORDER
ALLOW TUNING TO CERTAIN CHANNELS BASED ON SELECTED PREFERENCE ATTRIBUTES AND SPECIFIED PRIORITY OR SORT ORDER

FIG. 4

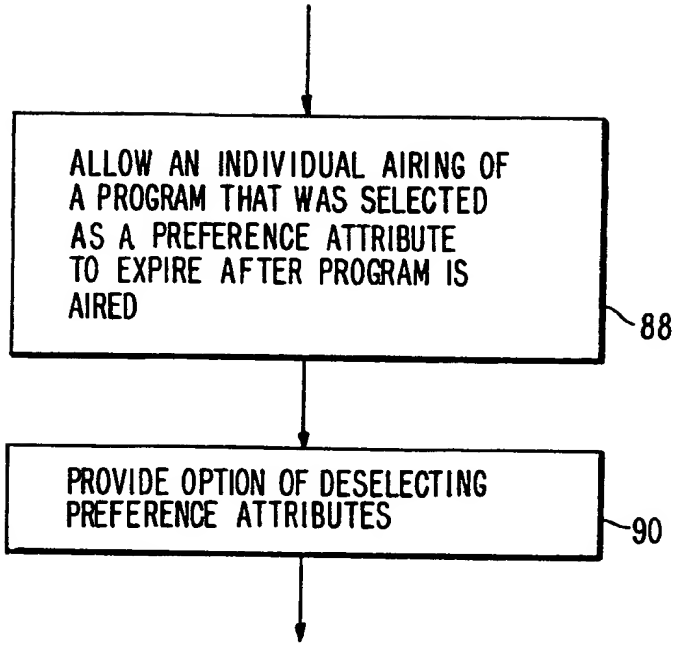

ALLOW AN INDIVIDUAL AIRING OF A PROGRAM THAT WAS SELECTED AS A PREFERENCE ATTRIBUTE TO EXPIRE AFTER PROGRAM IS AIRED
88
PROVIDE OPTION OF DESELECTING PREFERENCE ATTRIBUTES
90

FIG. 5

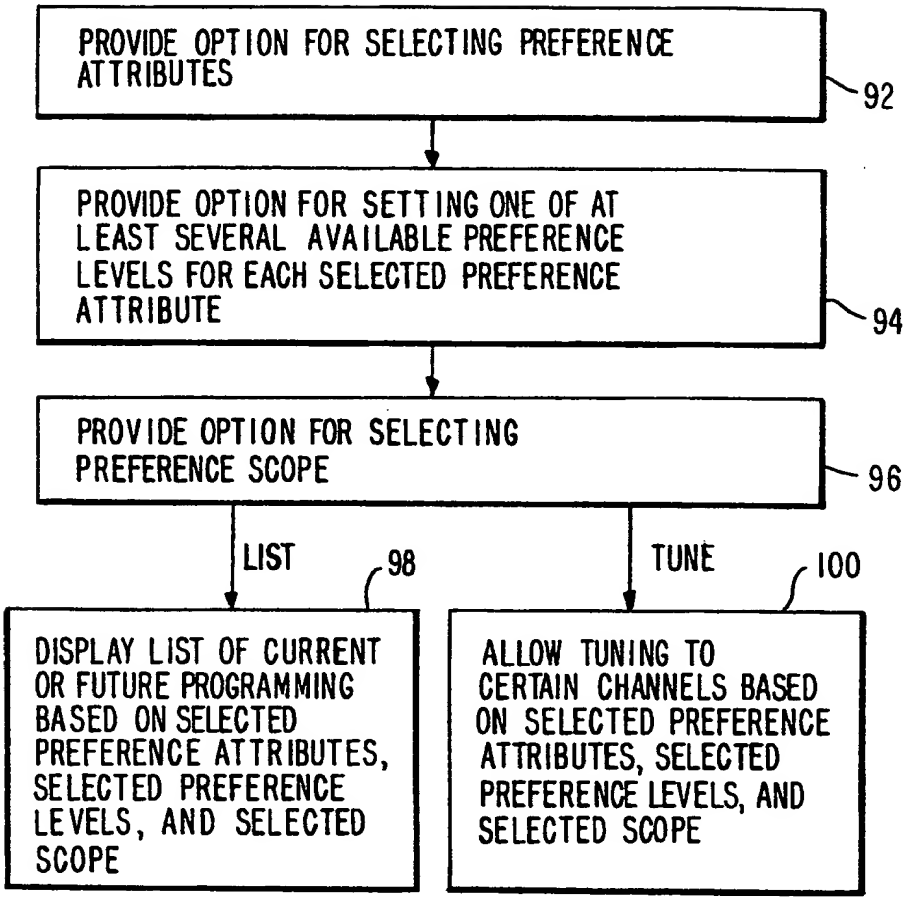

PROVIDE OPTION FOR SELECTING PREFERENCE ATTRIBUTES
92
PROVIDE OPTION FOR SETTING ONE OF AT LEAST SEVERAL AVAILABLE PREFERENCE LEVELS FOR EACH SELECTED PREFERENCE ATTRIBUTE
94
PROVIDE OPTION FOR SELECTING PREFERENCE SCOPE
96
LIST
98
TUNE
100
DISPLAY LIST OF CURRENT OR FUTURE PROGRAMMING BASED ON SELECTED PREFERENCE ATTRIBUTES, SELECTED PREFERENCE LEVELS, AND SELECTED SCOPE
ALLOW TUNING TO CERTAIN CHANNELS BASED ON SELECTED PREFERENCE ATTRIBUTES, SELECTED PREFERENCE LEVELS, AND SELECTED SCOPE

FIG. 6

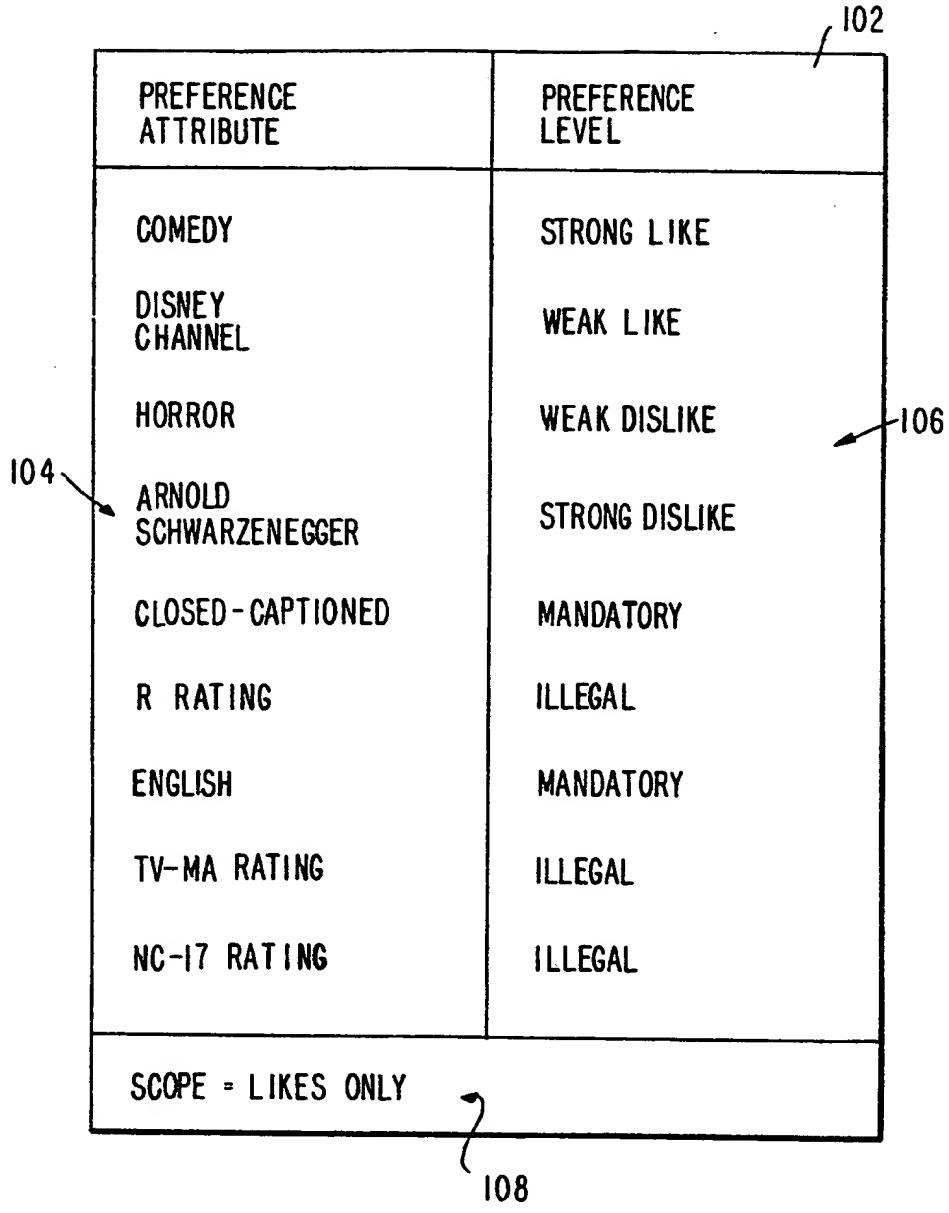
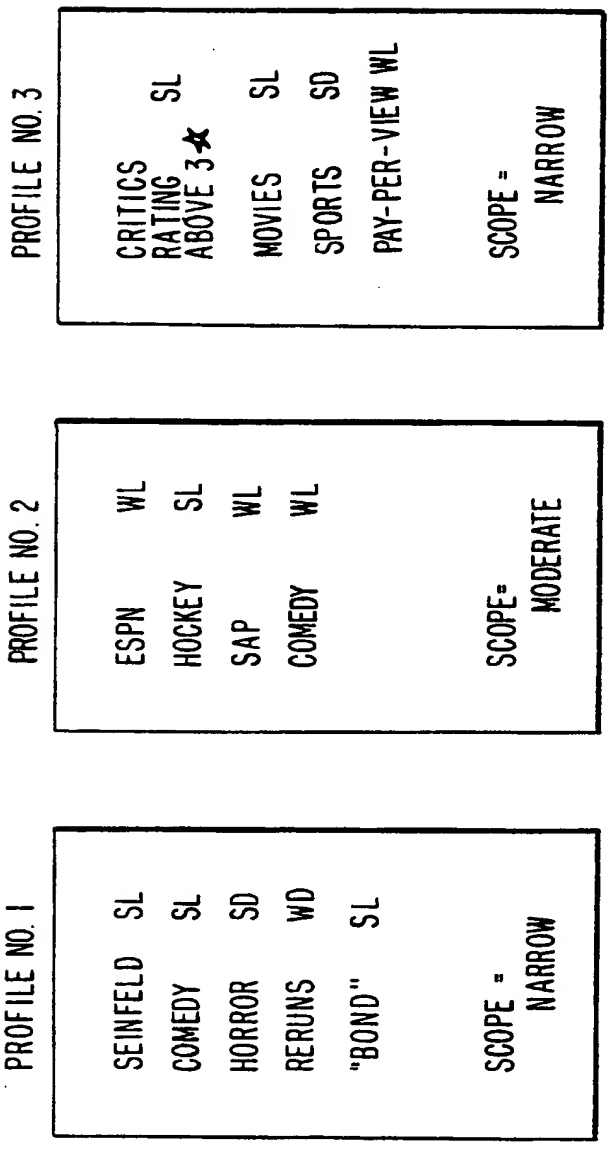

102
PREFERENCE ATTRIBUTE
PREFERENCE LEVEL
COMEDY
STRONG LIKE
DISNEY CHANNEL
WEAK LIKE
HORROR
WEAK DISLIKE
106
104
ARNOLD SCHWARZENEGGER
STRONG DISLIKE
CLOSED-CAPTIONED
MANDATORY
R RATING
ILLEGAL
ENGLISH
MANDATORY
TV-MA RATING
ILLEGAL
NC-17 RATING
ILLEGAL
SCOPE = LIKES ONLY
108

FIG. 7

FIG.8

| NARROW SCOPE | MODERATE SCOPE | WIDE SCOPE | TITLE | GENRE | CC | RATING | MANDATORY+ NOT ILLEGAL | HIGHEST LEVEL |
|---|---|---|---|---|---|---|---|---|
| Y | Y | Y | SEINFELD | COMEDY | Y | TV-PG | Y | SL |
| N | N | Y | THE SHINING | HORROR | Y | PG-13 | Y | WD |
| N | N | N | DANTE'S PEAK | COMEDY | Y | R | N | SL |
| N | N | N | NIGHT AT THE OPERA | COMEDY | N | G | N | SL |
| N | Y | Y | ER | DRAMA | Y | TV-PG | Y | NEUTRAL |
| N | N | Y | TERMINATOR | ACTION HORROR | Y | PG-13 | Y | SD |
| Y | Y | Y | MY STEPMOTHER IS AN ALIEN | COMEDY HORROR | Y | PG-13 | Y | SL+WD |

FIG. 9


PROFILE NO. 1
SEINFELD SL
COMEDY SL
HORROR SD
RERUNS WD
"BOND" SL
SCOPE = NARROW
PROFILE NO. 2
ESPN WL
HOCKEY SL
SAP WL
COMEDY WL
SCOPE= MODERATE
PROFILE NO. 3
CRITICS RATING ABOVE 3★ SL
MOVIES SL
SPORTS SD
PAY-PER-VIEW WL
SCOPE = NARROW

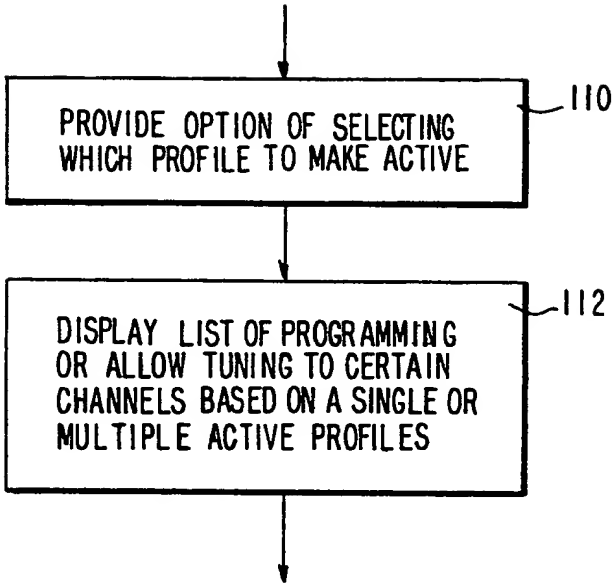

PROVIDE OPTION OF SELECTING WHICH PROFILE TO MAKE ACTIVE
110
DISPLAY LIST OF PROGRAMMING OR ALLOW TUNING TO CERTAIN CHANNELS BASED ON A SINGLE OR MULTIPLE ACTIVE PROFILES
112

FIG. 10

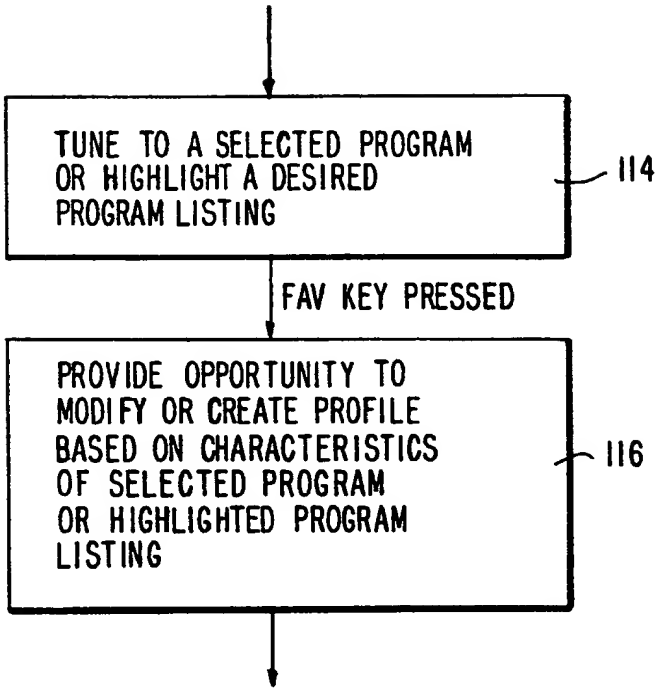

TUNE TO A SELECTED PROGRAM OR HIGHLIGHT A DESIRED PROGRAM LISTING
114
FAV KEY PRESSED
PROVIDE OPPORTUNITY TO MODIFY OR CREATE PROFILE BASED ON CHARACTERISTICS OF SELECTED PROGRAM OR HIGHLIGHTED PROGRAM LISTING
116

FIG. 11

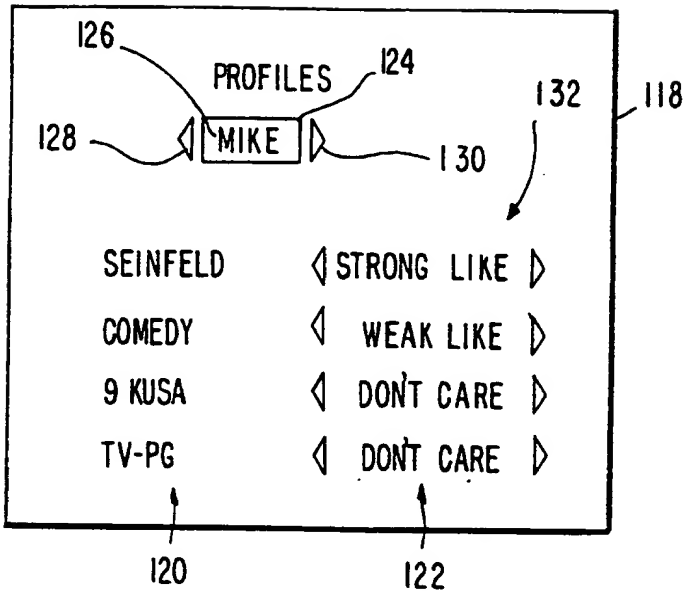

126
PROFILES
124
132
118
128
MIKE
130
SEINFELD
STRONG LIKE
COMEDY
WEAK LIKE
9 KUSA
DON'T CARE
TV-PG
DON'T CARE
120
122

FIG. 12

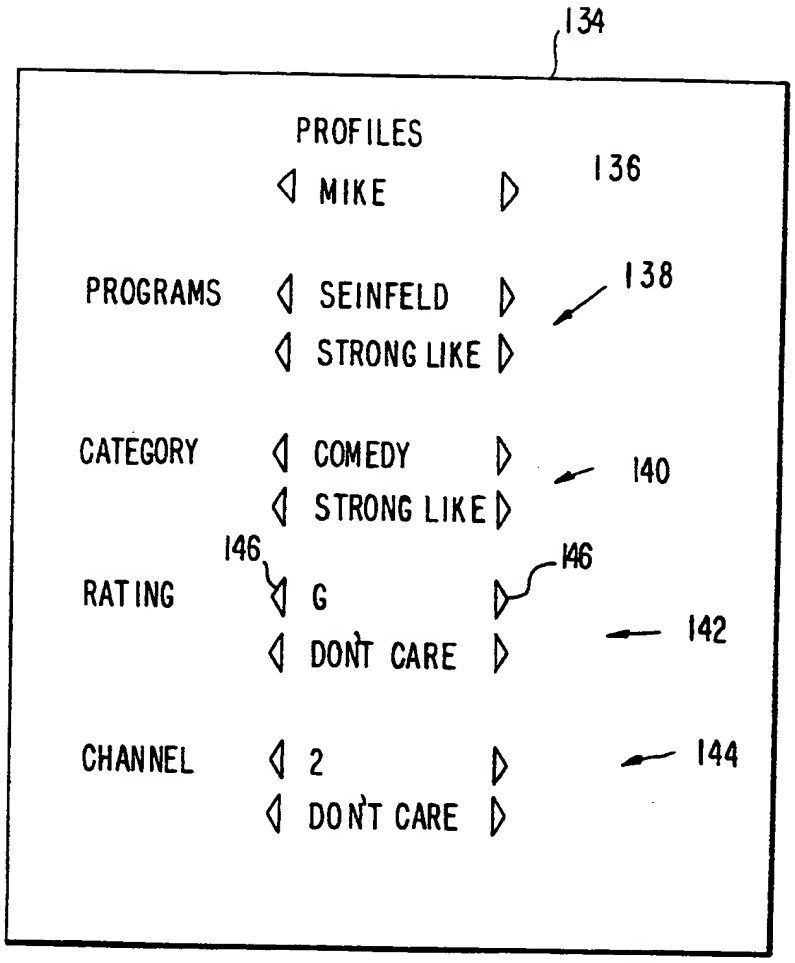

134
PROFILES
MIKE
136
PROGRAMS
SEINFELD
138
STRONG LIKE
CATEGORY
COMEDY
140
STRONG LIKE
146
146
RATING
G
142
DON'T CARE
CHANNEL
2
144
DON'T CARE

FIG. 13

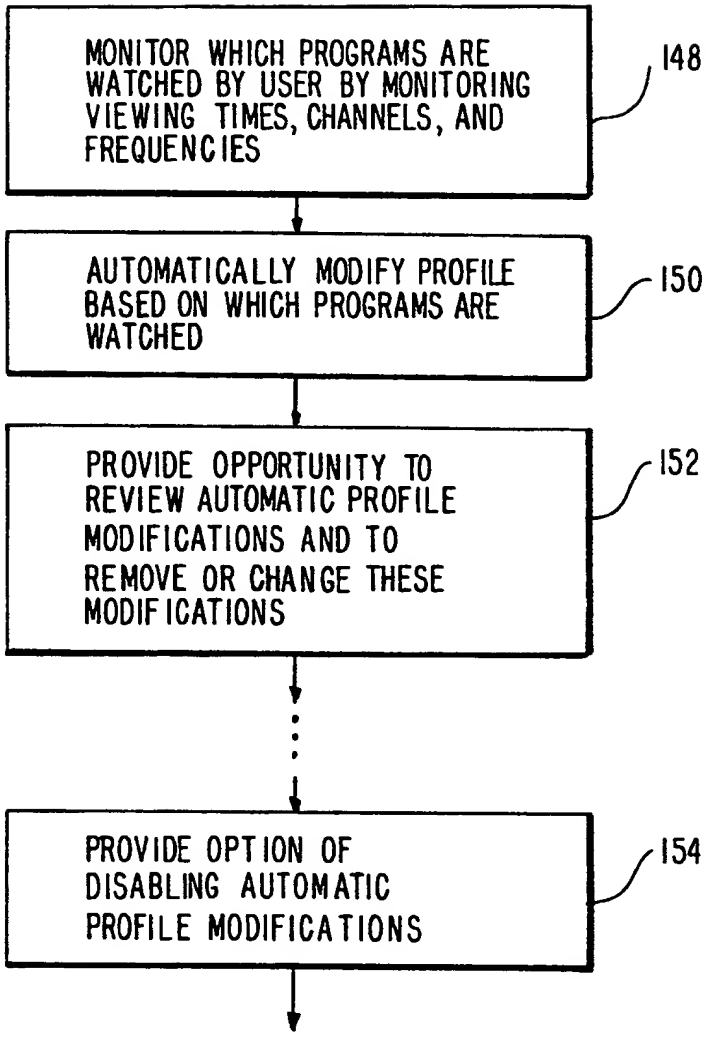

MONITOR WHICH PROGRAMS ARE WATCHED BY USER BY MONITORING VIEWING TIMES, CHANNELS, AND FREQUENCIES
148
AUTOMATICALLY MODIFY PROFILE BASED ON WHICH PROGRAMS ARE WATCHED
150
PROVIDE OPPORTUNITY TO REVIEW AUTOMATIC PROFILE MODIFICATIONS AND TO REMOVE OR CHANGE THESE MODIFICATIONS
152
PROVIDE OPTION OF DISABLING AUTOMATIC PROFILE MODIFICATIONS
154

FIG. 14

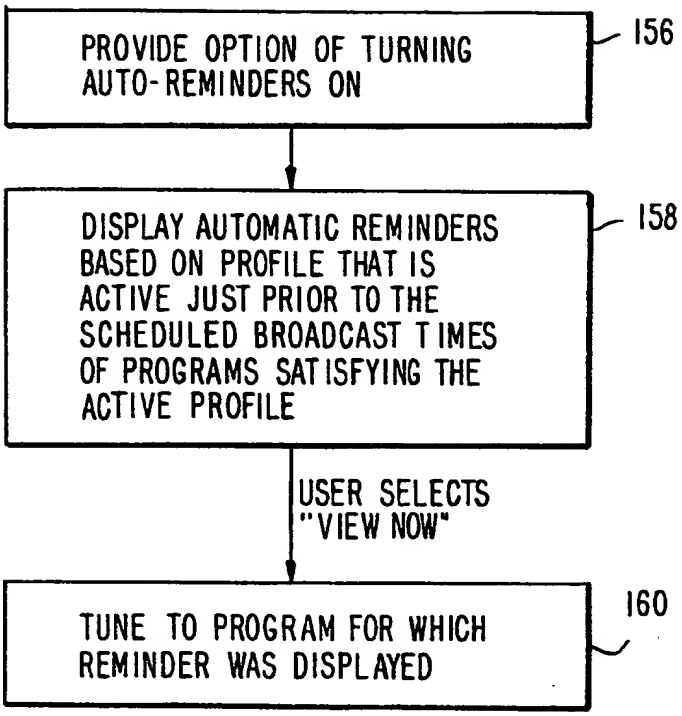

PROVIDE OPTION OF TURNING AUTO-REMINDERS ON
156
DISPLAY AUTOMATIC REMINDERS BASED ON PROFILE THAT IS ACTIVE JUST PRIOR TO THE SCHEDULED BROADCAST TIMES OF PROGRAMS SATISFYING THE ACTIVE PROFILE
158
USER SELECTS "VIEW NOW"
TUNE TO PROGRAM FOR WHICH REMINDER WAS DISPLAYED
160

FIG. 15

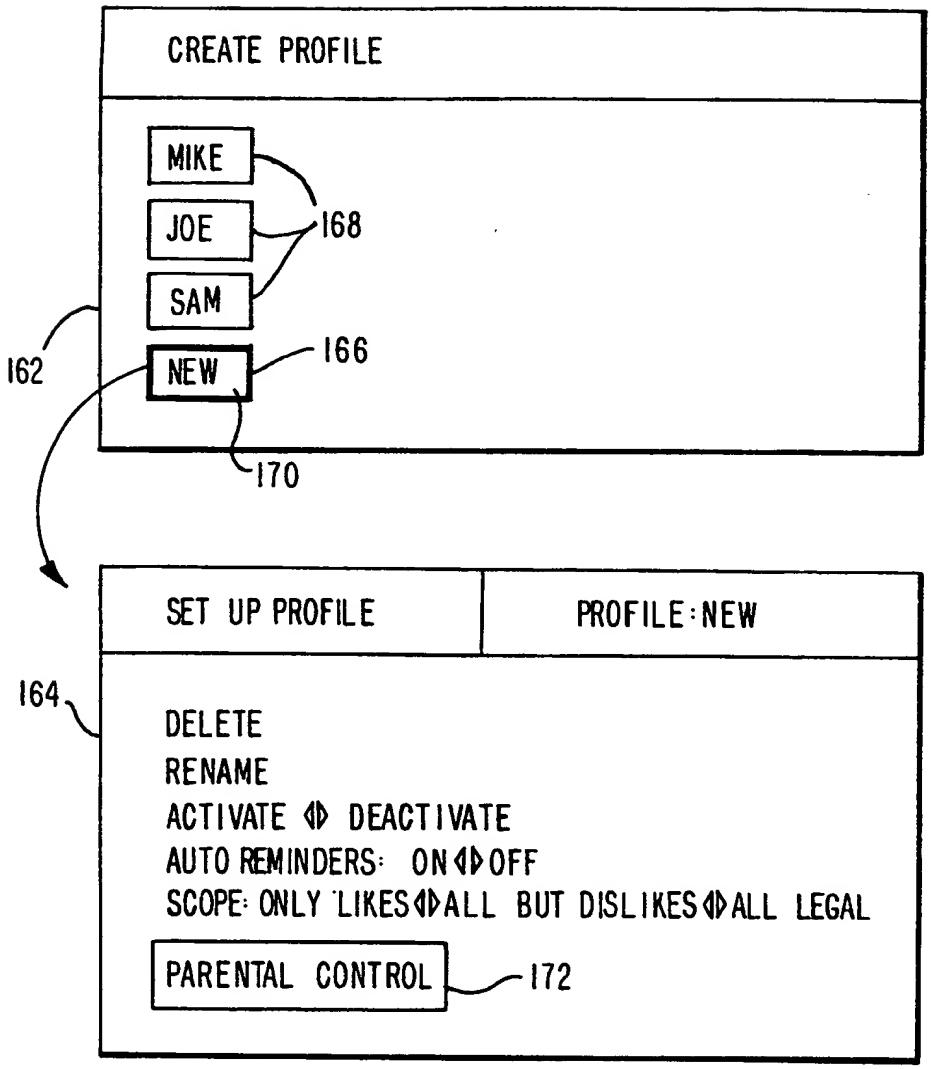

CREATE PROFILE
MIKE
JOE
SAM
NEW
168
162
166
170
SET UP PROFILE
PROFILE: NEW
164
DELETE
RENAME
ACTIVATE ⇕ DEACTIVATE
AUTO REMINDERS: ON ⇕ OFF
SCOPE: ONLY LIKES ⇕ ALL BUT DISLIKES ⇕ ALL LEGAL
PARENTAL CONTROL
172

FIG. 16

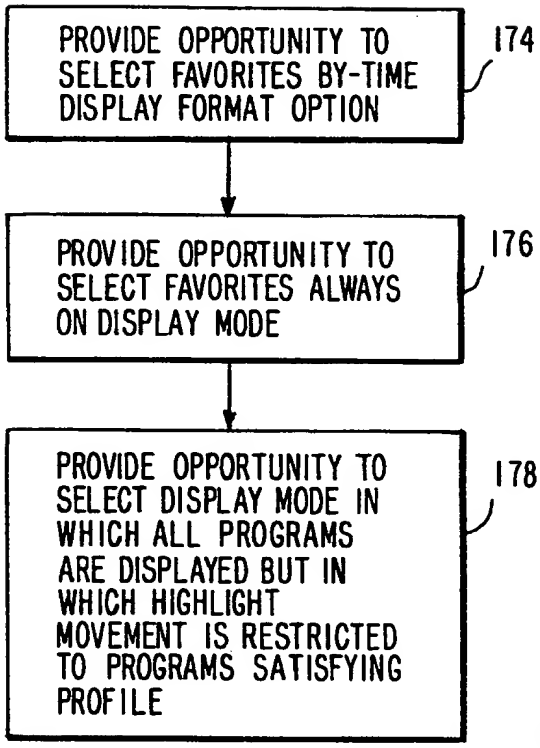

PROVIDE OPPORTUNITY TO SELECT FAVORITES BY-TIME DISPLAY FORMAT OPTION
174
PROVIDE OPPORTUNITY TO SELECT FAVORITES ALWAYS ON DISPLAY MODE
176
PROVIDE OPPORTUNITY TO SELECT DISPLAY MODE IN WHICH ALL PROGRAMS ARE DISPLAYED BUT IN WHICH HIGHLIGHT MOVEMENT IS RESTRICTED TO PROGRAMS SATISFYING PROFILE
178

FIG. 17

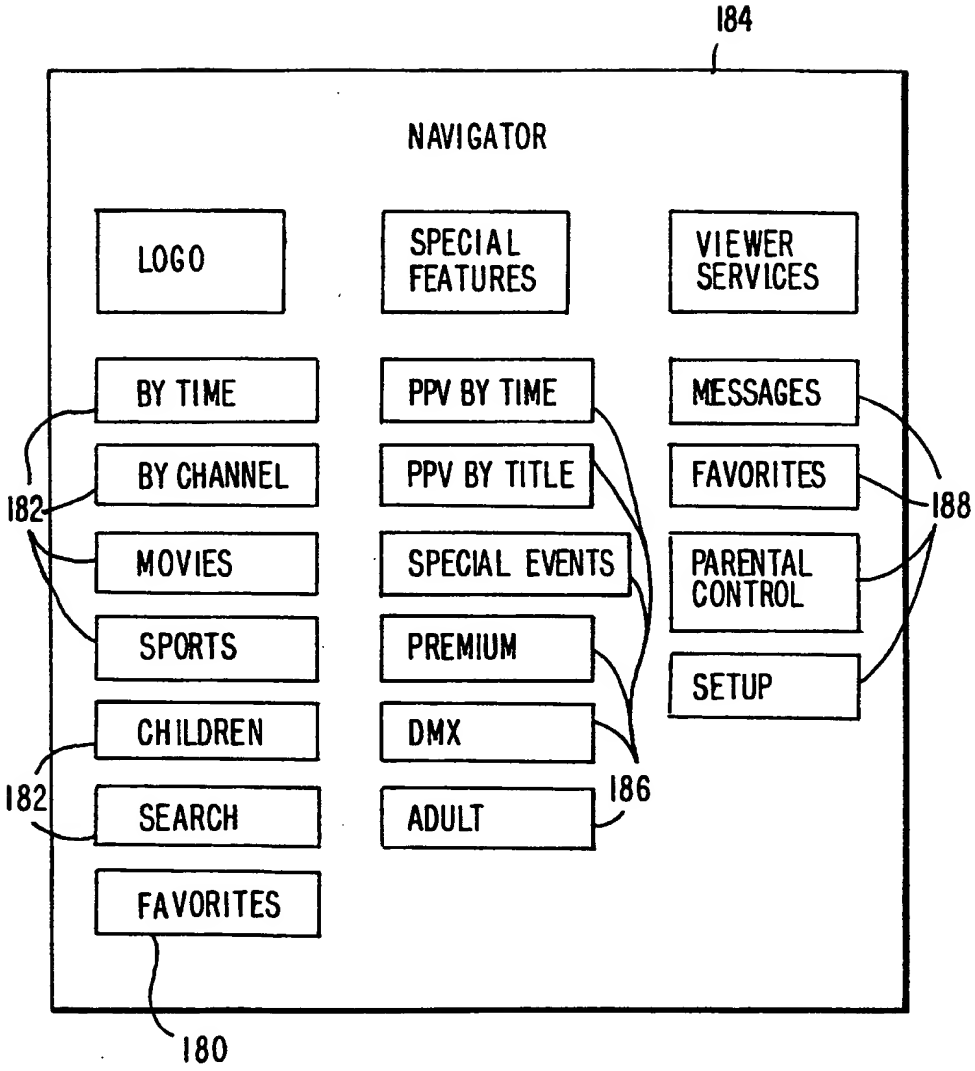

184
NAVIGATOR
LOGO
SPECIAL FEATURES
VIEWER SERVICES
BY TIME
BY CHANNEL
MOVIES
SPORTS
CHILDREN
SEARCH
FAVORITES
PPV BY TIME
PPV BY TITLE
SPECIAL EVENTS
PREMIUM
DMX
ADULT
MESSAGES
FAVORITES
PARENTAL CONTROL
SETUP
182
182
186
188
180

FIG. 18

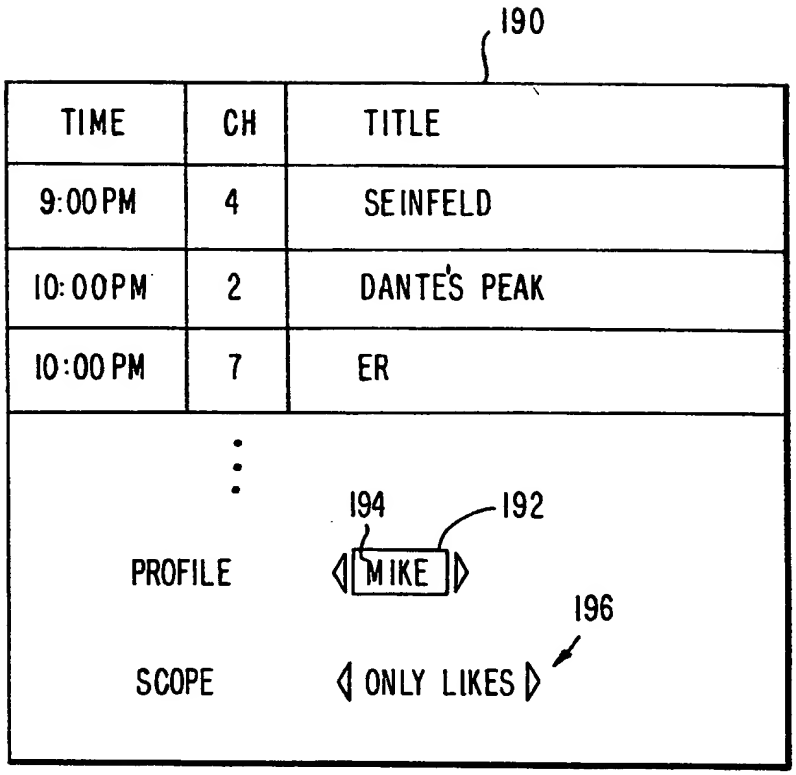

190
TIME
CH
TITLE
9:00 PM
4
SEINFELD
10:00 PM
2
DANTE'S PEAK
10:00 PM
7
ER
194
192
PROFILE
MIKE
196
SCOPE
ONLY LIKES

FIG. 19

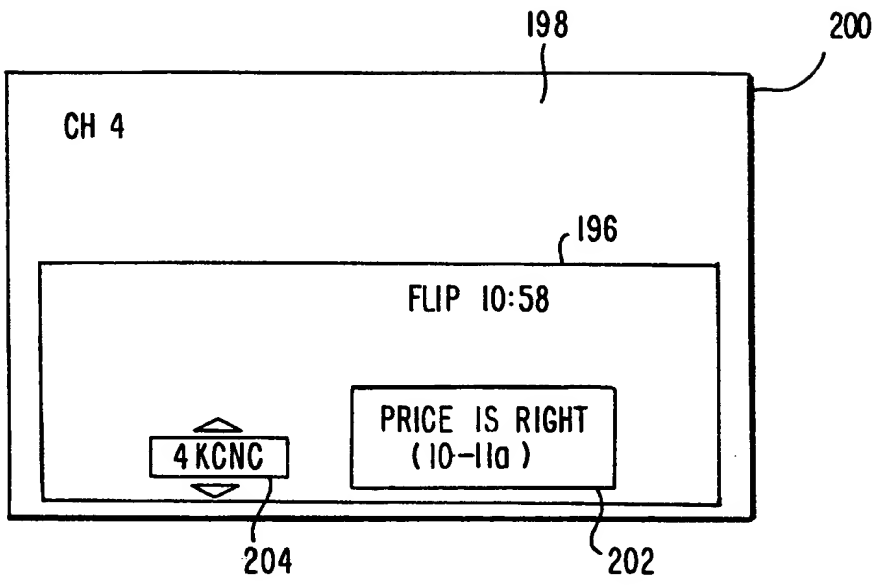



FIG. 20

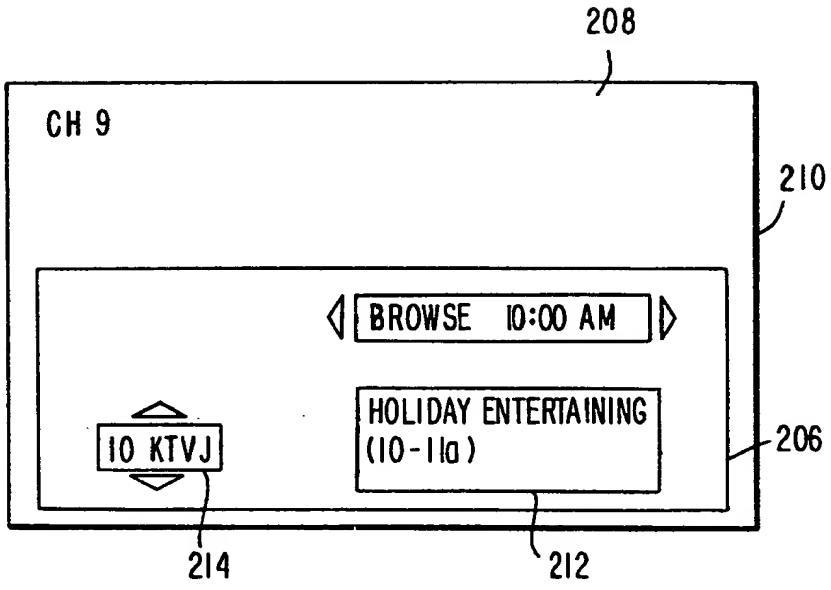

208
CH 9
210
BROWSE 10:00 AM
HOLIDAY ENTERTAINING
(10-11a)
206
10 KTVJ
214
212

FIG. 21

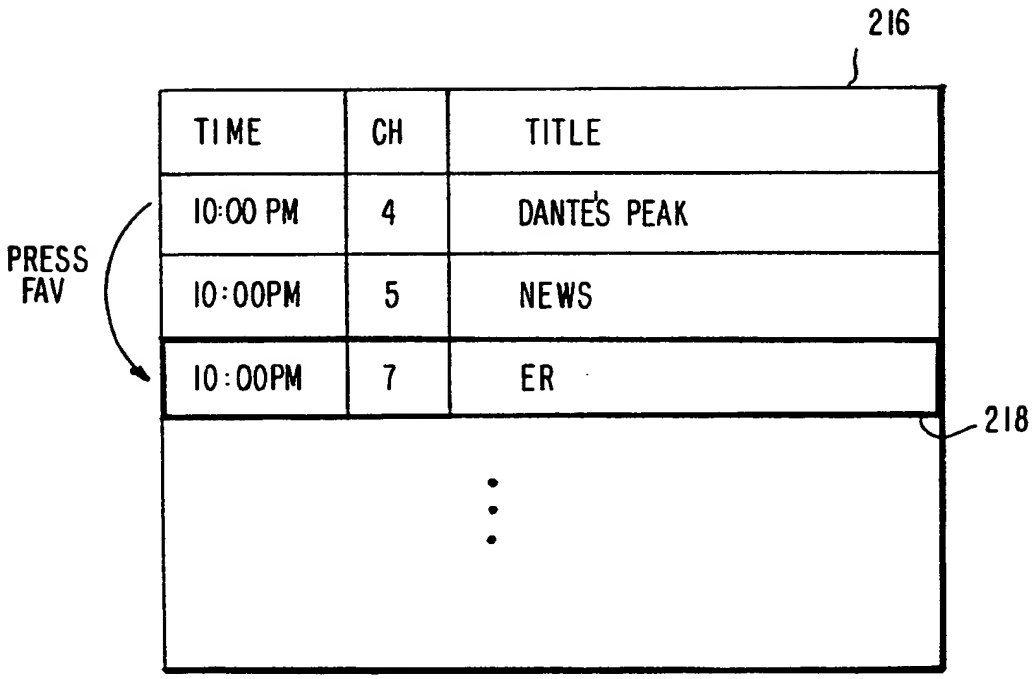

216
TIME
CH
TITLE
10:00 PM
4
DANTE'S PEAK
10:00PM
5
NEWS
10:00PM
7
ER
PRESS
FAV
218

FIG. 22

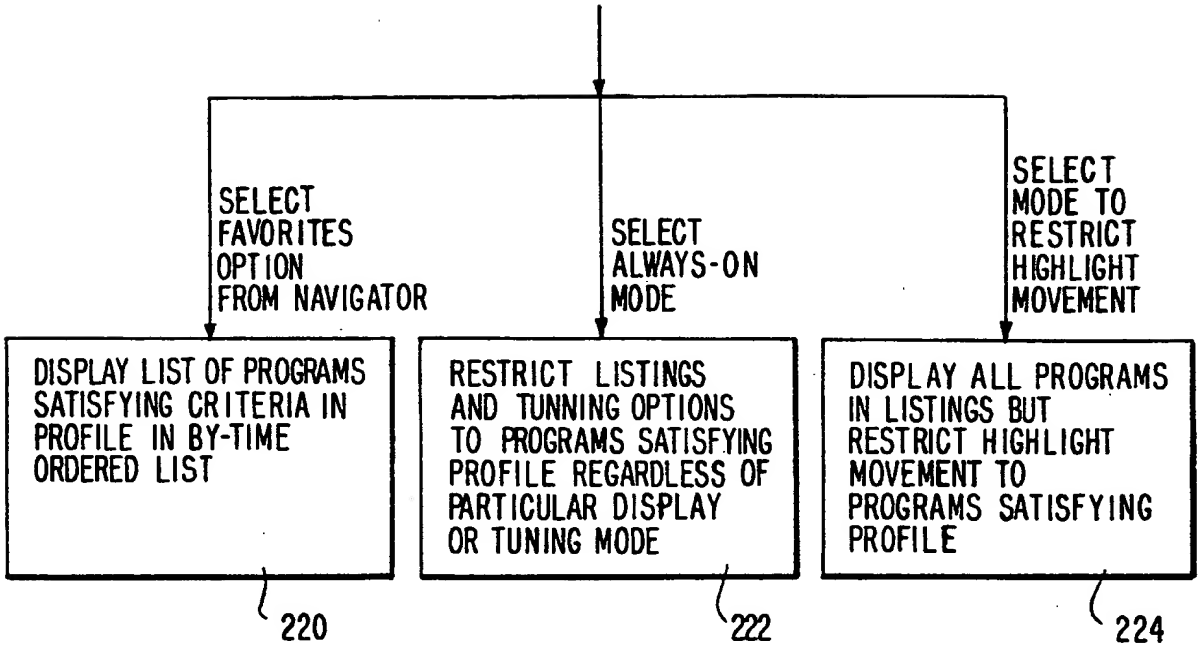

SELECT FAVORITES OPTION FROM NAVIGATOR
SELECT ALWAYS-ON MODE
SELECT MODE TO RESTRICT HIGHLIGHT MOVEMENT
DISPLAY LIST OF PROGRAMS SATISFYING CRITERIA IN PROFILE IN BY-TIME ORDERED LIST
RESTRICT LISTINGS AND TUNNING OPTIONS TO PROGRAMS SATISFYING PROFILE REGARDLESS OF PARTICULAR DISPLAY OR TUNING MODE
DISPLAY ALL PROGRAMS IN LISTINGS BUT RESTRICT HIGHLIGHT MOVEMENT TO PROGRAMS SATISFYING PROFILE
220
222
224

FIG. 23

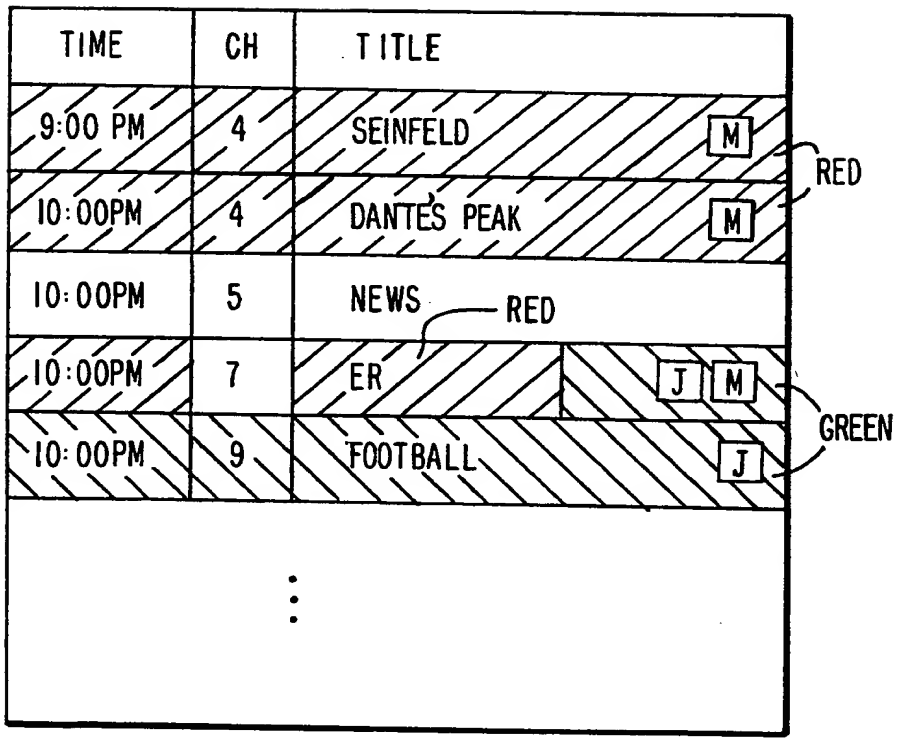

TIME
CH
TITLE
9:00 PM
4
SEINFELD
M
10:00PM
4
DANTES PEAK
M
RED
10:00PM
5
NEWS
RED
10:00PM
7
ER
J
M
10:00PM
9
FOOTBALL
J
GREEN

FIG. 24

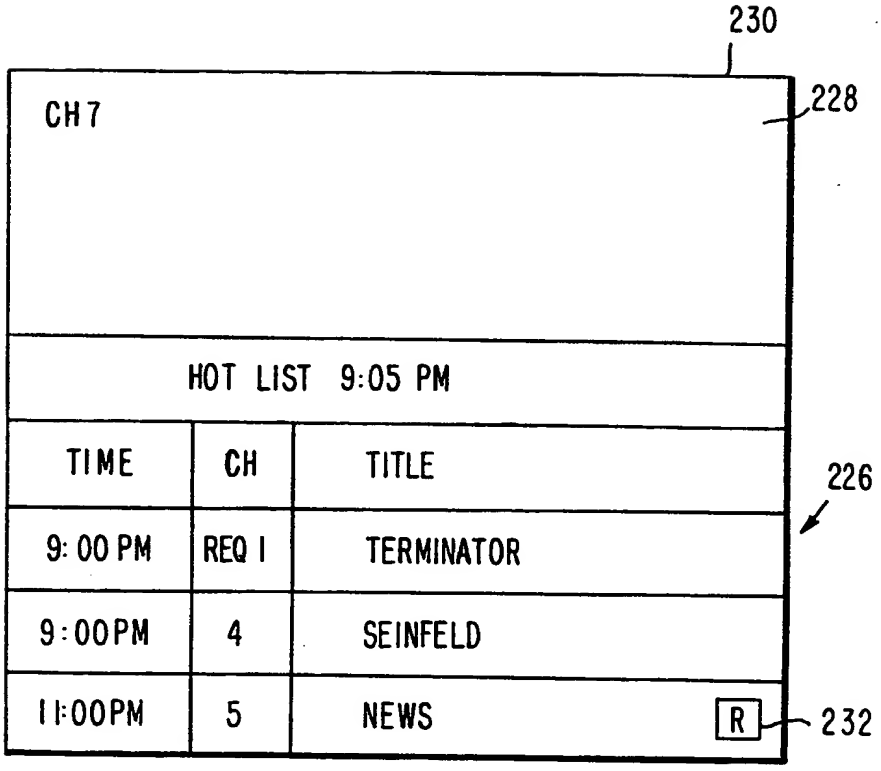

230
228
CH 7
HOT LIST 9:05 PM
TIME
CH
TITLE
226
9:00 PM
REQ 1
TERMINATOR
9:00PM
4
SEINFELD
11:00PM
5
NEWS
R
232

FIG. 25

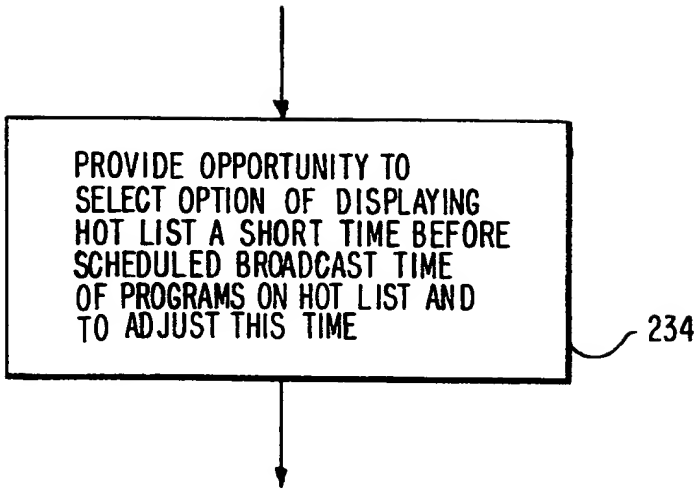

PROVIDE OPPORTUNITY TO SELECT OPTION OF DISPLAYING HOT LIST A SHORT TIME BEFORE SCHEDULED BROADCAST TIME OF PROGRAMS ON HOT LIST AND TO ADJUST THIS TIME
234

FIG. 26

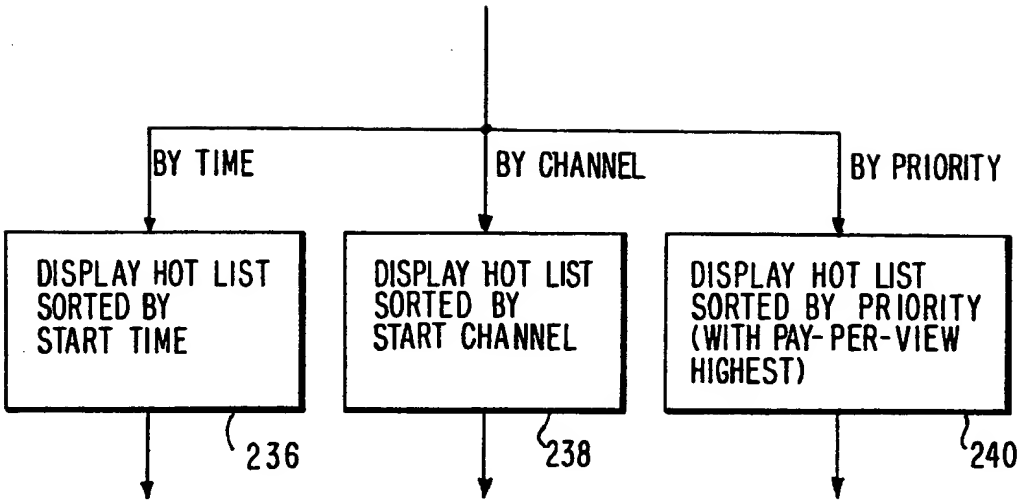

BY TIME
BY CHANNEL
BY PRIORITY
DISPLAY HOT LIST SORTED BY START TIME
DISPLAY HOT LIST SORTED BY START CHANNEL
DISPLAY HOT LIST SORTED BY PRIORITY (WITH PAY-PER-VIEW HIGHEST)
236
238
240

FIG. 27

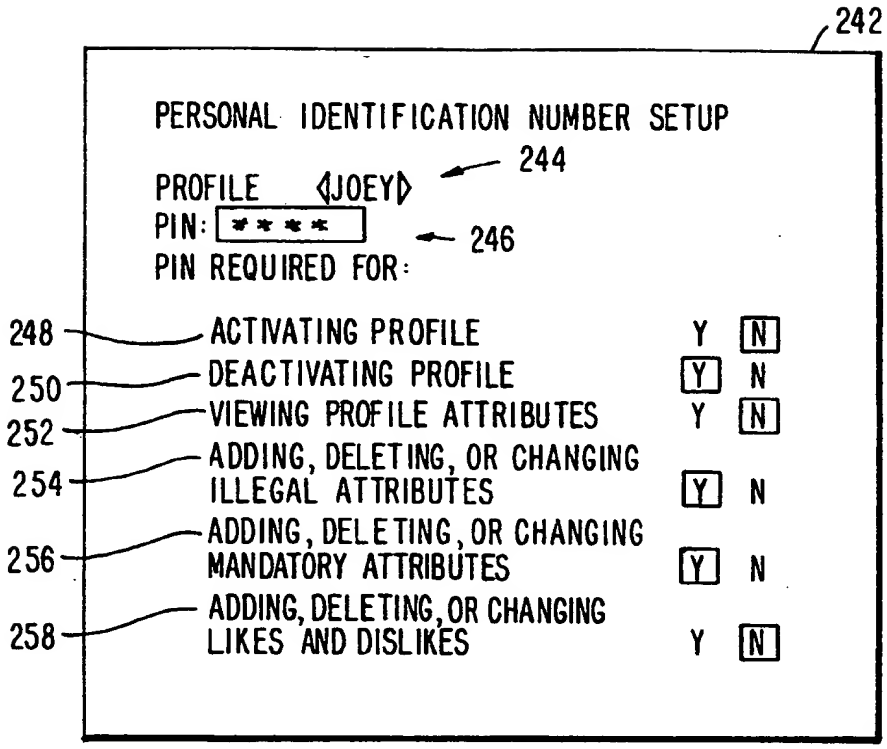

242
PERSONAL IDENTIFICATION NUMBER SETUP
244
PROFILE ‹JOEY›
PIN: ****
246
PIN REQUIRED FOR:
248
ACTIVATING PROFILE Y N
250
DEACTIVATING PROFILE Y N
252
VIEWING PROFILE ATTRIBUTES Y N
254
ADDING, DELETING, OR CHANGING ILLEGAL ATTRIBUTES Y N
256
ADDING, DELETING, OR CHANGING MANDATORY ATTRIBUTES Y N
258
ADDING, DELETING, OR CHANGING LIKES AND DISLIKES Y N

FIG. 28

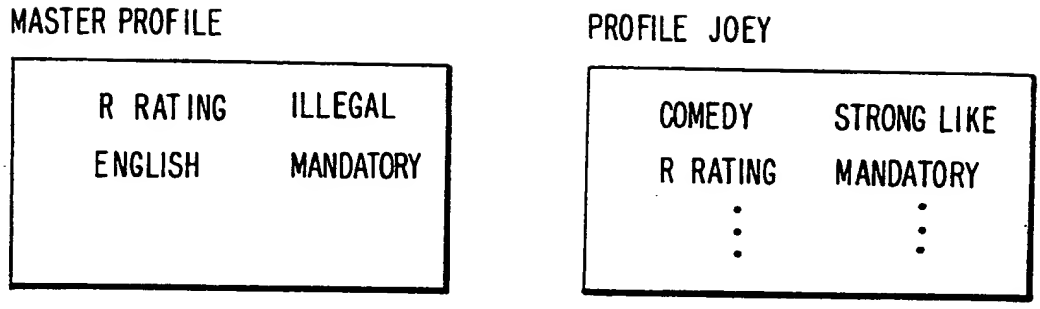

MASTER PROFILE
R RATING
ILLEGAL
ENGLISH
MANDATORY
PROFILE JOEY
COMEDY
STRONG LIKE
R RATING
MANDATORY

FIG. 29

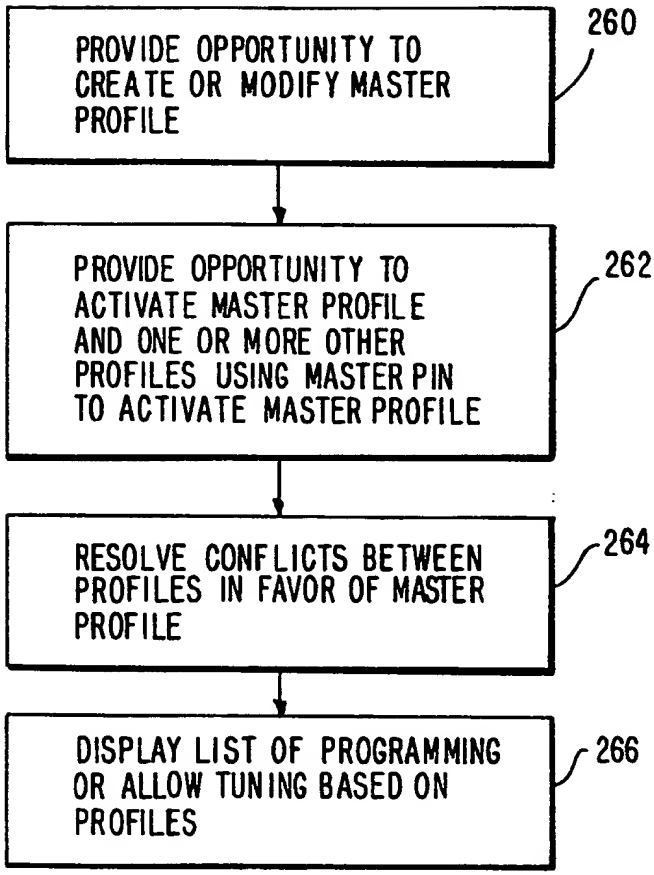
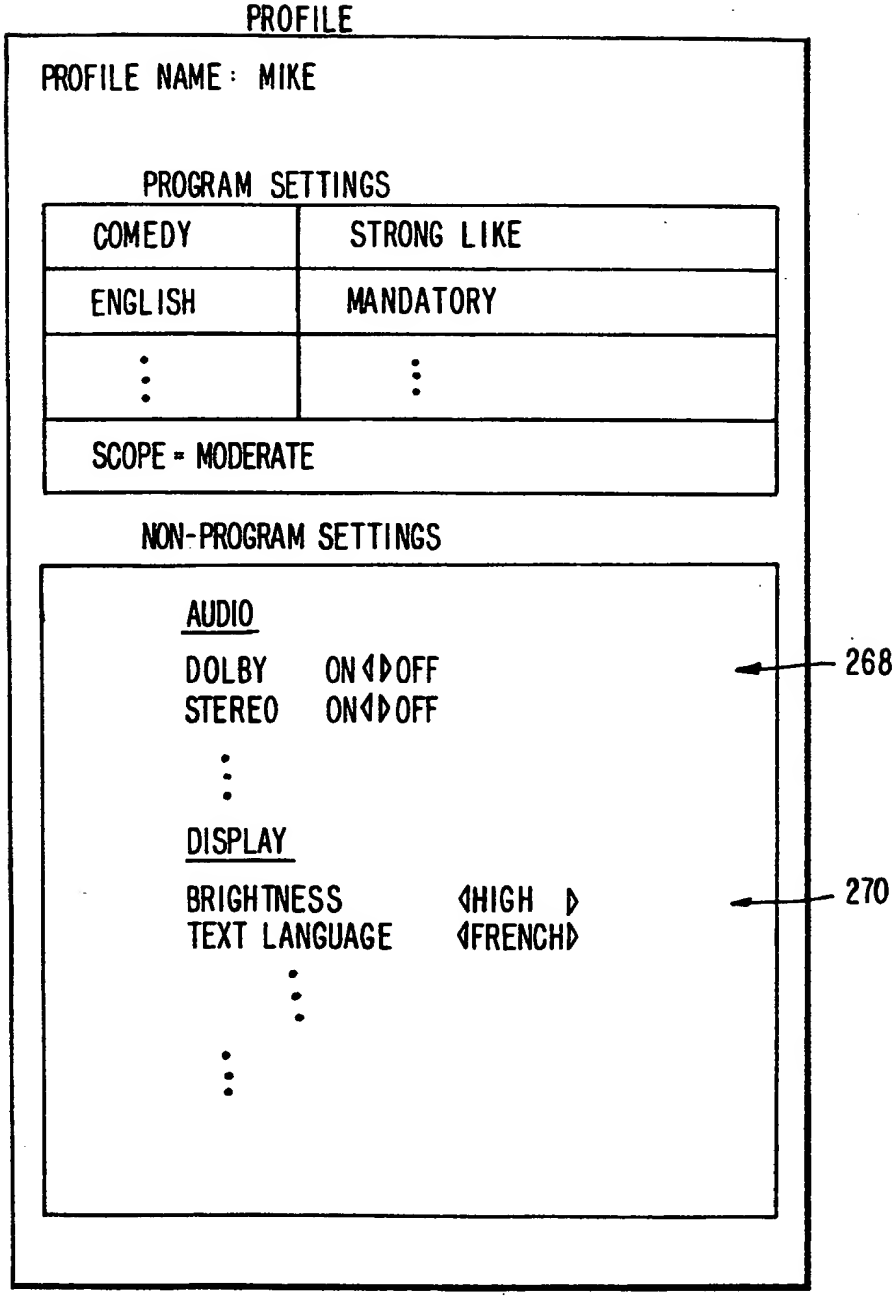

PROVIDE OPPORTUNITY TO CREATE OR MODIFY MASTER PROFILE
260
PROVIDE OPPORTUNITY TO ACTIVATE MASTER PROFILE AND ONE OR MORE OTHER PROFILES USING MASTER PIN TO ACTIVATE MASTER PROFILE
262
RESOLVE CONFLICTS BETWEEN PROFILES IN FAVOR OF MASTER PROFILE
264
DISPLAY LIST OF PROGRAMMING OR ALLOW TUNING BASED ON PROFILES
266

FIG. 30

FIG. 31


PROFILE
PROFILE NAME: MIKE
PROGRAM SETTINGS
COMEDY
STRONG LIKE
ENGLISH
MANDATORY
SCOPE = MODERATE
NON-PROGRAM SETTINGS
AUDIO
DOLBY ON◀▶OFF
STEREO ON◀▶OFF
DISPLAY
BRIGHTNESS ◀HIGH ▶
TEXT LANGUAGE ◀FRENCH▶
268
270

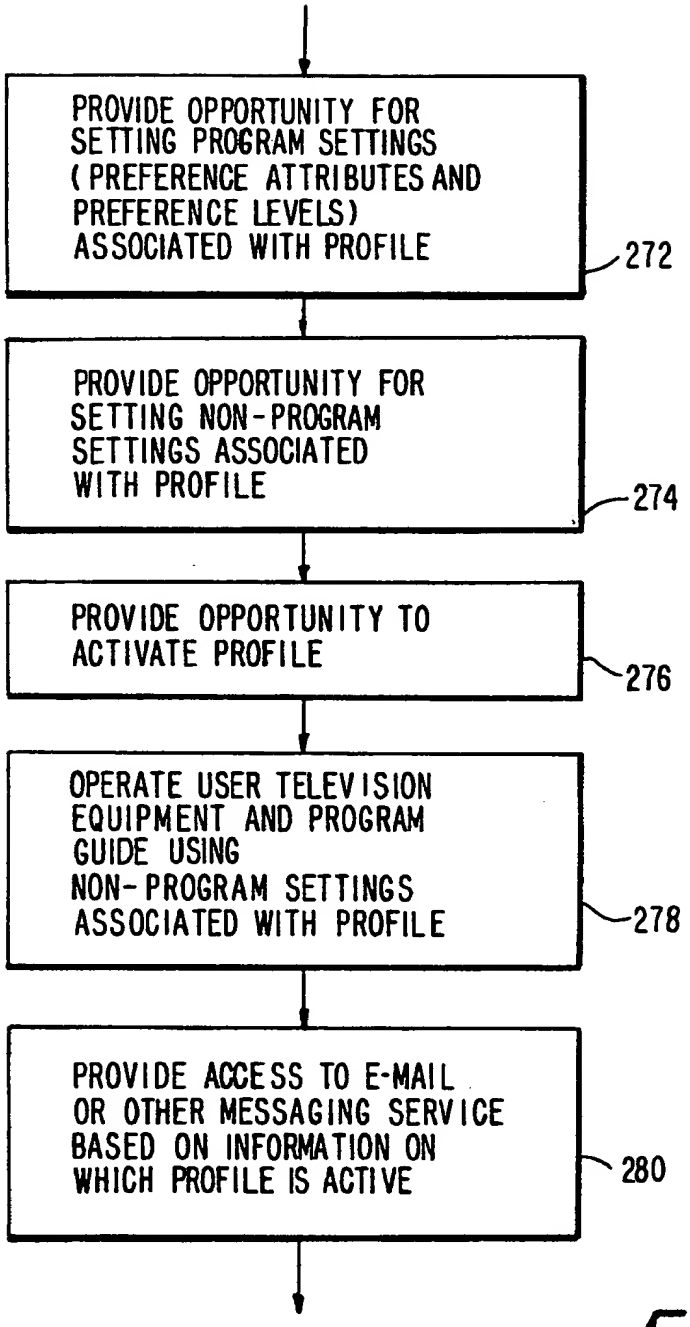

PROVIDE OPPORTUNITY FOR SETTING PROGRAM SETTINGS (PREFERENCE ATTRIBUTES AND PREFERENCE LEVELS) ASSOCIATED WITH PROFILE
272
PROVIDE OPPORTUNITY FOR SETTING NON-PROGRAM SETTINGS ASSOCIATED WITH PROFILE
274
PROVIDE OPPORTUNITY TO ACTIVATE PROFILE
276
OPERATE USER TELEVISION EQUIPMENT AND PROGRAM GUIDE USING NON-PROGRAM SETTINGS ASSOCIATED WITH PROFILE
278
PROVIDE ACCESS TO E-MAIL OR OTHER MESSAGING SERVICE BASED ON INFORMATION ON WHICH PROFILE IS ACTIVE
280

FIG. 32

# INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/US 99/04143

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X<br>A | WO 97 48230 A (STARSIGHT TELECAST INC)<br>18 December 1997<br>see page 18, line 15 - page 20, line 37 | 1,92<br>2-91,<br>93-180 |
| P,X | EP 0 854 645 A (TEXAS INSTRUMENTS INC)<br>22 July 1998<br>see column 12, line 3 - line 43<br>see column 16, line 32 - column 17, line 32 | 1,92 |
| A | US 5 585 866 A (DARATA PAUL ET AL)<br>17 December 1996<br>see column 20, line 6 - column 21, line 67; figure 30 | 1-180 |

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 1 June 1999 | 09/06/1999 |

| Name and mailing address of the ISA | Authorized officer |
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| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Yvonnet, J |

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Inter ›nal Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication,where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | EP 0 721 253 A (SONY ELECTRONICS INC)<br>10 July 1996<br>see column 16, line 26 - column 20, line 4 | 1-180 |

1

# INTERNATIONAL SEARCH REPORT

...formation on patent family members

Inter nal Application No
PCT/US 99/04143

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| WO 9748230 A | 18-12-1997 | AU 3294997 A | 07-01-1998 |
| EP 0854645 A | 22-07-1998 | JP 10207914 A | 07-08-1998 |
| US 5585866 A | 17-12-1996 | US 5781246 A | 14-07-1998 |
| | | AU 6092996 A | 30-12-1996 |
| | | CA 2223018 A | 19-12-1996 |
| | | EP 0830787 A | 25-03-1998 |
| | | PL 323830 A | 27-04-1998 |
| | | WO 9641477 A | 19-12-1996 |
| | | US 5589892 A | 31-12-1996 |
| | | US 5822123 A | 13-10-1998 |
| EP 0721253 A | 10-07-1996 | US 5596373 A | 21-01-1997 |
| | | BR 9600018 A | 21-01-1998 |
| | | CA 2166434 A | 05-07-1996 |
| | | CN 1142161 A | 05-02-1997 |

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